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ABSTRACT

Presented alphabetically by author's name in the second of the two volume annotated bibliography are 483 abstracts of scientific and public education literature on cerebral palsy published through 1971. The entries are said to focus on children under 2 years of age whose development has been delayed by the condition. The bibliography is explained to be fostered by the National Task Force of the United Cerebral Palsy Associations and developed at the University of Iowa for professionals in the field of education, medicine, social work, physical therapy, occupational therapy, psychology, nursing, child development, communication skills, and physical education. (See EC 060 607 for the first volume.) (MC)

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CEREBRAL PALSY AND RELATED DEVELOPMENTAL DISABILITIES

PREVENTION AND EARLY CARE

AN ANNOTATED BIBLIOGRAPHY

VOLUME I

PART TWO

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66 East 34th Street
New York, New York 10016

603. Macaulay, Duncan, and Watson, Marjorie: "Hypernatraemia in Infants as a Cause of Brain Damage," *Archives of Disease in Childhood*, 42:485-491, Oct., 1967.

One hundred and twenty-two children were studied between 1 1/2 and 8 years after having had hypernatraemia in infancy for the purpose of determining their neurological status. Methods are described. The children were grouped on the basis of results and 22 were excluded for various reasons. Of the remaining 100 cases, eight surviving children had brain damage, and eight children who had died were thought to have had brain damage. Details of these 16 cases are presented in tables. The data was further analyzed in an attempt "to find factors in the original illness, which might be of aetiological and prognostic significance" and to ascertain the cerebral pathology in hypernatraemia. Possible methods of prevention are discussed. It is felt that preventing hypernatraemia will do more to reduce the brain damage, than will "treatment of the established condition."

604. McCandless, Geary A.: "Clinical Application of Evoked Response Audiometry," *Journal of Speech and Hearing Research*, 10: 468-478, Sept., 1967.

Evoked response audiometry measures were used to test the hearing of 128 patients "who were unable or unwilling to respond accurately to conventional audiometric techniques." Ninety-one of the 128 were six years of age or younger. Procedures, testing results, and six case reports illustrating applicability of the technique are presented. Ten of the 12 cases that produced unsatisfactory results were two years of age or younger. "Unfortunately, evoked response measures are least consistent in the very young patient where it is needed most." Advantages and disadvantages are discussed.

605. McCracken, George H., Jr.; Shinefield, Henry R.; Cobb, Katherine; Rausen, Aaron R.; Dische, M. Renata; and Eichenwald, Heinz F.: "Congenital Cytomegalic Inclusion Disease: A Longitudinal Study of 20 Patients," *American Journal of Diseases of Children*, 117:522-539, May, 1969.

Twenty infants with CID, selected "during the first weeks of life" were extensively studied "for periods up to 9 years." Eighteen of the infants had congenital CID. Epidemiological, clinical, and laboratory findings are reported. Hepatosplenomegaly was the most common clinical finding. Nine of the

18 infants with congenital CID showed evidence of CNS disease by the age of six months. Follow-up developmental and mental examination results are described on 14 of the 18 congenital cases. "Seven of the patients have severe mental and developmental retardation."

606. McDonald, Alison. *Children of Very Low Birth Weight; A Survey of 1128 Children with a Birth Weight of 4 Lbs. (1800 G.) or Less*. Foreward by M.C.O. Bax and R.C. MacKeith, London: Spastics Society Medical Education and Information Unit in association with Heinemann Medical Books, 1967. 126 pp. (M.E.I.U. Monograph, No. 1.)

A survey was conducted on over 1000 children who had a birth weight of 4 lbs. or less. At the time of tracing the children were between six and eight years of age. The perinatal history and the follow-up clinical findings are reported in individual chapters. Following chapters review the pertinent literature and report the findings of the survey with respect to cerebral palsy, intelligence, eye defects, hearing, and fits. Conclusions are presented and discussed in the final chapter.

607. McDonald, Alison D.: "The Aetiology of Spastic Diplegia; A Synthesis of Epidemiological and Pathological Evidence," *Developmental Medicine and Child Neurology*, 6:277-285, June, 1964.

The literature concerning the epidemiology and pathology of spastic diplegia is reviewed and integrated. The cases of "periventricular leukomalacia" reported by Banker and Lorroche (Arch. Neurol. Chic., 7:386, 1962) are discussed and compared to spastic diplegia with respect to common epidemiological features.

608. McDonald, Alison D.: "Cerebral Palsy in Children of Very Low Birth Weight," *Archives of Disease in Childhood*, 38: 579-588, Dec., 1963.

The literature is briefly reviewed, and the syndromes of spastic diplegia, spastic hemiplegia, and choreo-athetosis are described. A survey of 1,081 surviving children, weighing 4 lbs. or less at birth, was taken when the children were between six and eight years old for the purpose of studying

the relationship between low birth weight and cerebral palsy. Seventy of these children were found to have cerebral palsy; 57 of these 70 had spastic diplegia. Factors studied and reported for the spastic diplegic children include birth weight, length of gestation, sex, early postnatal history, social class, maternal factors, pregnancy and delivery factors and multiple birth rate. The ways in which the other types of cerebral palsy differed from spastic diplegia are mentioned. Causal implications are discussed.

609. McDonald, Alison D.: "Early Prenatal Factors and Prematurity," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 69:502-505, June, 1962.

In a prospective study, 204 out of 3,179 infants weighed less that 5 1/2 lbs. at birth. An apparent reason for the low birth weight was determined in 89. The remaining 115 infants were divided into two groups on the basis of length of gestation, studied and compared to the others with respect to maternal characteristics, pregnancy factors, and survival.

610. McDonald, Eugene T., and Chance, Burton, Jr.: *Cerebral Palsy*, Englewood Cliffs, New Jersey: Prentice-Hall, 1964. 146 pp. (Foundations of Speech Pathology Series.)

Topics considered in the first five chapters of this text include the multidisciplinary approach, neurophysiological background, etiology, diagnosis, classification, associated disorders, and treatment. Chapters VI and VII deal with the diagnosis and treatment of the speech and language disorders associated with cerebral palsy. A ten-page bibliography is included.

611. McDonald, John S.: "Evaluation of Fetal Blood pH as a Reflection of Fetal Well-Being," *American Journal of Obstetrics and Gynecology*, 97:912-918, April 1, 1967.

A study involving 64 infants was conducted "(1) to determine if fetal blood obtained by dermapuncture is representative of the acid-base status of the fetus; (2) to determine if a correlation exists between fetal blood pH and the one minute Apgar score; (3) to determine if a correlation exists between

fetal blood pH and signs of clinical distress, and (4) to determine if the technique of dermapuncture is feasible and acceptable." Methods and results are presented. Analysis of data showed that fetal blood obtained by dermapuncture was usually representative of the fetal acid-base status, that there was a correlation between fetal blood pH and 1 minute Apgar score, that in a small sample a poor correlation existed between pH values and signs of clinical distress, and that "the technique of dermapuncture is both feasible and acceptable yet there are certain points to consider" which are discussed.

612. Macfarlane, David W., and Hanks, Susan B.: "'The Clapper--Dapper'" *Pediatrics*, 45:116-118, Jan., 1970.

Described and pictured is a "device to prevent equinus during weight bearing." It consists of an aluminum plate, slightly longer than the child's shoe, that is affixed to the foot with ski binding. Pictures show the parts of the device, the assembled device, and the application of the device to the foot. Its successful use with over 50 children is described.

613. McKay, R. James, Jr., and Lucey, Jerold F.: "Neonatology," *New England Journal of Medicine*, 270:1231-1236, June 11, 1964.

Recent (1964) developments in the field are reviewed in this two-part article. Among the topics discussed are "drugs and the intrauterine and newborn patient," "respiratory-distress syndrome," "infants of diabetic mothers," "neonatal hypoglycemia," "bilirubin metabolism and 'physiologic' jaundice," "risk of kernicterus," "susceptibility to kernicterus," "amniocentesis," "new approaches to the treatment of erythroblastosis fetalis," "prognosis of prematurity," and "aids to diagnosis." Lengthy bibliographies are included after each part.

614. MacKeith, Ronald: "Cerebral Palsy," in *Ambulatory Pediatrics*, edited by Morris Green and Robert J. Haggerty. Philadelphia: W.B. Saunders, 1968. pp. 493-508.

The needs of handicapped children which must be fulfilled by the medical services of the community are listed and individually discussed. Many aspects of cerebral palsy are then

reviewed: Definition, classification, identification, treatment, and prevention. "Normal Motor Development in the First Year" is the subject of the lengthy appendix.

615. McMullin, G.P.; Hayes, M.F.; and Arora, S.C.: "Phenobarbitone in Rhesus Haemolytic Disease," *Lancet*, 2:949-952, Nov. 7, 1970.

Sixty neonates with rhesus hemolytic disease were studied. Thirty of the infants received phenobarbitone as described while 30 controls did not. "Thirty control infants required 40 exchange transfusions; 30 treated infants required 21 exchange transfusions." This is a statistically significant difference. "Two babies in the control group died as a direct result of haemolytic disease or of exchange transfusion. In the treated group there was no neonatal mortality and no morbidity attributable to phenobarbitone. It is concluded that phenobarbitone given to infants affected by rhesus haemoltyic disease from the first few hours of life is of considerable value in reducing the need for exchange transfusion, especially in those mildly affected by rhesus incompatibility." Possible harmful effects of phenobarbitone are discussed.

616. Macnaughton, M.D.: "Hormone Excretion as a Measurement of Fetal Growth and Development," *American Journal of Obstetrics and Gynecology*, 97:998-1019, Apr. 1, 1967.

In this review numerous hormones, measurable in the urine during pregnancy, are considered for the purpose of determining their relationship to fetal growth and development. It is felt that early detection and treatment of fetal growth retardation will decrease infant mortality and morbidity. It is concluded at the time of publication that "measurement of urinary estrogens, particularly estriol, gives the most useful information about fetal growth." A lengthy bibliography follows.

617. McNeil, A.T.: "The Soviet or Psychoprophylactic Method of Painless Childbirth," *Cerebral Palsy Bulletin*, 3:159-166, 1961.

The subject of psychosomatic childbirth is surveyed with emphasis on the Soviet method. Usage of the method and its

results in Paris are described. It is concluded that employment of this method of "painless childbirth" without the use of analgesics may result in a definite decrease in cerebral palsy incidence.

618. Macourt, D.; Corker, C.S.; Naftolin, F.: "Plasma Oestriol in Pregnancy," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 78:335-340, April, 1971.

The results of estimating total plasma estriol in 400 normal pregnancies by using "a competitive protein binding method" are reported, including mean normal values, serial estimations, day-to-day variations, diurnal variations, the relationship between maternal plasma estriol level and exercise and meals, and postpartum levels." The advantages of the measurement of plasma oestriol levels over the 24- or 48-hour urinary oestriol assays are discussed.

619. MacQueen, John C.: "Services for Children with Multiple Handicaps," *Children*, 13:55-59, March-April, 1966.

Several of the services provided by the Iowa State Services for Crippled Children are briefly described including the mobile field clinics, the work of the agency with the institutions in the state, the program concerned with the problems of high-risk mothers and their babies, and the programs of the future that are needed in the state. One of these is the need for preschool facilities for handicapped children.

620. MacRae, D.J., and Mohamedally, S.M.: "Effect of Abdominal Decompression on the Metabolism of the Foetoplacental Unit," *Proceedings of the Royal Society of Medicine*, 63:502-505, May, 1970.

Seventeen cases of suspected fetal growth retardation were treated by abdominal decompression in order to study its effect on the production of pregnanediol and estriol treatment methods are described. "A rise in hormone levels was obtained in 15 of the 17 cases treated." The two cases showing no increase are described and interpreted. "It may be concluded that the metabolism of pregnanediol and oestriol during pregnancy can be increased by intermittent abdominal decompression."

621. MacRae, D.J., and Palavradji, D.: "The Effect of Complications of Pregnancy and Labour on the Acid-Base Balance of the Baby at Birth," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 72:269-272, Apr., 1965.

The biochemical effects of abnormal pregnancy and labor on the baby were studied in 150 cases. Methods of analysis are explained. Major changes in the acid-base balance were revealed in cases having these complications. It is suggested that such biochemical changes may cause mortality and morbidity in newborns.

622. Magendantz, Henry G.; Klausner, David; Ryan, Kenneth J.; and Yen, S.S.C.: "Estriol Determinations in the Management of High-Risk Pregnancies," *Obstetrics and Gynecology*, 32:610-619, Nov., 1968.

Results of performing 764 estriol determinations as described in 135 high-risk pregnancies and 10 normal pregnancies are reported. There were 14 perinatal deaths, and data on these are presented. The findings confirm the usefulness of the method, performed serially, to "forewarn the physician of instances of chronic progressive fetoplacental compromise."

623. Mahon, D.F., and Farthing, D.M.: "Training Classes for Handicapped Children," *Physiotherapy*, 57:409-412, Sept. 10, 1971.

Such classes at the nursery school level in Birmingham, England and the process whereby they were established are described. Designed to provide a stimulating environment for the children and an opportunity for learning, socialization, etc. for the mothers, these classes are held "at personal and child health centres" once a week with both mothers and children attending. A physiotherapist is present at each meeting. Toys and equipment used and the factors needed for a successful program are explained. Future needs are stated.

624. Malamud, Nathan; Itabashi, Hideo H.; Castor, Jane; and Messinger, Harley B.: "An Etiologic and Diagnostic Study of Cerebral Palsy. A Preliminary Report," *Journal of Pediatrics*, 65:270-293, Aug., 1964.

Sixty-eight consecutively autopsied cases of cerebral palsy were studied. The study of more is forthcoming. Data was obtained relating to case history, medical findings, and postmortem findings. Pathological findings "were classified on the basis of distinctive pathologic patterns" into two groups: "(1) malformations and (2) destructive processes." Number two was subdivided into "(a) primary subcortical pathology or sequelae of perinatal trauma, (b) primary cortical pathology or sequelae of postnatal disorders, and (c) status dysmyelinisatus or sequelae of kernicterus." Results of classification and discussion of each of these four groups is presented. One hundred fifty-six clinical factors were derived and correlated with the four groups. Results concerning 24 of these prenatal and perinatal factors are discussed. In general the findings confirmed "the diagnostic accuracy of the pathologic classification" and "pointed to the operation of different etiologic factors in each of the groups."

625. Man, Evelyn B.; Adelman, Maurice; Jones, Walter S.; and Lord, Robert H.: "Developmental and BEI of Full-Term and Low-Birth-Weight Infants Through 18 Months," *American Journal of Diseases of Children*, 119:298-307, Apr., 1970.

Realizing that "circulating thyroxine-like iodine compounds" are essential for normal CNS development, the authors studied thyroid function, with serum butanal-extractable iodine (BEI) as the test, in full term and low birth weight infants through the age of 18 months. Subjects and the method used to determine serum BEI values are described; results are presented and pictured in graphs. The BEI values in the normal, full term infants through 18 months were significantly higher than in adults. Compared to these controls the BEI values of the low birth weight infants were significantly lower. Fifteen low birth weight infants were developmentally examined. The BEI values of those 9 classified as normal "appeared to rise postnatally." The others classified as suspect or abnormal, were found to have "low or borderline BEI." Comment is made and a lengthy bibliography follows.

626. Man, Evelyn B.; Holden, Raymond H.; and Jones, Walter S.: "Thyroid Function in Human Pregnancy. VII. Development and Retardation of 4-Year-Old Progeny of Euthyroid and of Hypothyroxinemic Women," *American Journal of Obstetrics and Gynecology*, 109:12-19, Jan. 1, 1971. (Series: For II see #629, III see #630, IV see #631, V see #627, VI see #518, VIII see #628.)

Reported is a follow-up study comparing the development at four years of age of "17 children born to hypothyroxinemic women given adequate thyroid replacement therapy and 27 children born to hypothyroxinemic women not given adequate replacement therapy" to the development of 192 children born to euthyroid mothers. Previous data is summarized, and the subjects and testing methods are described. The children were tested for I.Q., fine and gross motor development, and vocabulary and speech. In all test areas, except gross motor development, the children of euthyroid and adequately treated hypothyroxinemic women did better than the children of the inadequately treated women. Implications are considered.

627. Man, Evelyn B., and Jones, Walter S.: "Thyroid Function in Human Pregnancy. V. Incidence of Maternal Serum Low Butanol Extractable Iodines and of Normal Gestational TBG and TBPA Capacities; Retardation of 8-Month Old Infants," *American Journal of Obstetrics and Gynecology*, 104:898-908, July 15, 1969. (Series: For II see #629, III see #630, IV see #631, VI see #518, VII see #626, VIII see #628.)

Measured during 1394 pregnancies were one or more serum butanol-extractable iodine (BEI) values, and measured during 375 pregnancies were one or more serum thyroxine-binding globulin (TBG) and thyroxine-binding prealbumin (TBPA) capacities. Characteristics and grouping of the patients plus methods of study are described. Included in the results reported is a developmental comparison of the offspring of the mothers who were treated for low BEI values and the offspring of untreated mothers. The infants were assessed at approximately 8 months of age using "the COLR form of Bayley's scales of mental and motor development." "81% of 26 infants of women, given adequate Proloid after 2 low BEI were classified 'normal,' approximately the same per cent as for infants of euthyroid women; but only 48% of 56 infants of women with 2 low BEI not given adequate thyroid replacement therapy were 'normal'." Further study needs are noted.

628. Man, Evelyn B.; Jones, Walter S.; Holden, Raymond H.; and Mellits, E. David. "Thyroid Function in Human Pregnancy. VIII. Retardation of Progeny Aged 7 Years; Relationships to Maternal Age and Maternal Thyroid Function," *American Journal of Obstetrics and Gynecology*, 111:905-916, Dec. 1, 1971. (Series: For II see #629, III see #630, IV see #631, V see #627, VI see #518, VII see #626.)

This series of articles continues with examination and comparison of data presented for the study subjects at age seven years. Described are the study, the subjects, examination methods,

statistical methods, examination results of the "progeny of control euthyroid mothers" and of the "progeny of hypothyroxinemic inadequately treated mothers," and the results of comparing the "scores of 7-year-old children with full scale Intelligence Quotients below the mean - 1 S.D." "The greater percentages of dull-normal 7-year-old children born to hypothyroxinemic inadequately treated women than to euthyroid mothers conform with the data in results on 4-year-old children and also with findings on 326 8-month-old infants."

629. Man, Evelyn B.; Reid, William A.; Hellegers, Andre E.; and Jones, Walter S.: "Thyroid Function in Human Pregnancy. II. Serum Butanol-Extractable Iodine Values of Pregnant Women 14 Through 44 Years," *American Journal of Obstetrics and Gynecology*, 103:328-337, Feb. 1, 1969. (Series: For III see #630, IV see #631, V see #627, VI see #518, VII see #626, VIII see #628.)

Because of the fact that "thyroxine-like iodine compounds" are needed for the normal development of the CNS in the fetus and infant, and because of the known increase in reproductive failure, toxemia, and mental retardation of offspring in pregnant women at the lower and upper levels of childbearing age, a study of a group of such women was undertaken to establish serum BEI standards for them under normal conditions and to determine the role that thyroid function plays in such complications for such women. The BEI values "during 94 normal pregnancies of girls aged 14 through 17 and 52 normal pregnancies of women aged 35 through 44 years" were compared to such values in women 18 to 34 years of age. "Older women had suggestively lower and the 14-year-old girls significantly higher BEI values. For girls aged 15 to 17, the elevation tended to decrease with each year of age." Implications are considered.

630. Man, Evelyn B.; Reid, William A.; Hellegers, Andre E.; and Jones, Walter S.: "Thyroid Function in Human Pregnancy. III. Serum Thyroxine-Binding Pre-albumin (TBPA) and Thyroxine-Binding Globulin (TBG) of Pregnant Women Aged 14 Through 43 Years," *American Journal of Obstetrics and Gynecology*, 103: 338-347, Feb. 1, 1969. (Series: For II see #629, IV see #631, V see #627, VI see #518, VII see #626, VIII see #628.)

Accompanying the previous article, this paper presents "data on serum TBPA and TBG capacities of pregnant women." TBPA, TBG, and BEI values were determined and compared in 122 normal pregnancies. Detailed results and relationships are given in

the text and in a series of graphs. In general TBG capacities rose during the pregnancy, decreased during the postpartum period, and "were not related to age." TBPA capacities were lower during pregnancy than during the postpartum period, and "were related to age and varied reciprocally with BEI." Implications are discussed.

631. Man, Evelyn B.; Reid, William A.; and Jones, Walter S.: "Thyroid Function in Human Pregnancy. IV. Serum Butanol-Extractable Iodine Drop with Weight Gain," *American Journal of Obstetrics and Gynecology*, 102:244-247, Sept. 15, 1968. (Series: For II see #629, III see #630, V see #627, VI see #518, VII see #626, VIII see #628.)

Twenty-four pregnant women, without stated complicating conditions, were studied because of a noted decrease in serum BEI of at least 20%. This decrease was found to follow a sudden weight gain, edema, and/or an upper respiratory infection. The BEI's were noted to rise sharply "after the sudden descent." Thus it was shown that when conditions such as sudden weight gain, etc. exist, a single low BEI value does not necessarily indicate the need for thyroid therapy. Confirmation would be needed when such conditions did not exist.

632. Mandelbaum, Bernard; La Croix, George C.; and Robinson, Abner, R.: "Determination of Fetal Maturity by Spectrophotometric Analysis of Amniotic Fluid," *Obstetrics and Gynecology*, 29: 471-474, Apr., 1967.

Single and serial samples of amniotic fluid were obtained in obstetric patients and were analyzed using a spectrophotometer as described. Bibirubin was seen to progressively decrease during pregnancy with the 450 mm peak disappearing after 36 weeks of gestation. None of the infants "delivered after a 00 reading" weighed less than five pounds and signs of prematurity were absent. Thus far, the procedure described has accurately assessed fetal maturity and may be of value in the timing of elective terminations of pregnancy."

633. Mann, Leon I.; Solomon, Gail; Carmichael, Andrew; and Duchin, Sybil: "The Effect of Metabolic Acidosis on Fetal Brain Function and Metabolism," *American Journal of Obstetrics and Gynecology*, 111:353-359, Oct. 1, 1971.

Ten pregnant ewes were studied to determine the above effect. A significant decrease in pH was noted when lactic acid was infused as described into the fetal circulation. "Oxygen tension in the carotid artery, carotid blood flow, heart rate, and cerebral oxygen consumption did not change significantly during the acid infusion. An increase in cerebral glucose consumption and an uptake of lactate by the brain was associated with a dropout of the faster rhythms in the electroencephalogram (EEG), a decrease in amplitude, and the appearance of sharp waves. While the systemic acidosis was corrected by the infusion of THAM, cerebral function in terms of EEG responded poorly." "Similarities of these results to those observed during hypoxia are discussed."

634. Mark, Henry J., and Mark, Shirley Alpern: "Neuropsychology Examinations in Young Children," in *Exceptional Infant, Volume 2, Studies in Abnormalities*, edited by Jerome Hellmuth. New York: Brunner/Mazel, 1971. Pp 41-53.

"The frequently affected avenues of learning in young children" are considered and discussed under the categories of "sensori-motor modalities" and "languages." Various elements of the neuropsychological examination are considered, including "limit testing" to identify psychosocial factors that may affect results, the identification of areas of strength and weakness from a "skill profile," and elicitation of "the child's best intellectual capabilities" to set a standard and to "anchor" the child's profile. Also considered is the proper use of these profiles and the translation of these "diagnostic profiles into treatment and prescriptions." The importance of a comprehensive examination, as opposed to using sampling techniques, with high risk children is discussed.

635. Marks, Alan N., and Man, Evelyn B.: "Serum Butanol-Extractable Iodine Concentrations in Prematures," *Pediatrics*, 35:753-758, May, 1965.

The importance of adequate BEI levels in infancy for the proper development of the central nervous system is stressed. Two hundred and one BEI's of 187 newborns, including 20 who weighed under 2000 gm. at birth were compared. "Mean BEI values increased progressively through 500 gm. increments in birth weight from the 2,000-2,500 gm. to the 3,500-4,000 gm. group, without further rise for infants over 4,000." Fifteen of the infants who were premature or had had low BEI's were

examined at between 11 to 19 months of age. "Seven of these 15 children could not be classified clinically as normal in growth and development." Related literature is reviewed.

636. Marrow, Grant, III; Bongiovanni, Alfred M.; Bomberger, John H.A.; and Boggs, Thomas R., Jr.: "The Effect of Triiodothyronine on Neonatal Hyperbilirubinemia," *Journal of Pediatrics*, 68:413-417, March, 1966.

The daily administration of triiodothyronine for four days after infants with either hemolytic disease or idiopathic hyperbilirubinemia had received an initial exchange transfusion had no effect, compared to controls, on the number of transfusions needed. It was thus concluded that this drug was ineffective "in controlling hyperbilirubinemia, regardless of its cause."

637. Marstrander, J.: "The Prognostic Value of Neurologic Signs in Infancy: Preliminary Results from a Follow-Up Study of Prematures with Birth Weight Less than 2000 G.," *Acta Paediatrica Scandinavica Supplement*, 159:81-84, 1965.

Reported are the results of a study in which 80 infants, having birth weights of less than 2000 grams, were given "regular control examinations" at the ages of 4, 8, 12, and 18 months. Tables show the results of evaluation at the four examinations and the frequency of "the most important neurologic signs" seen at the four examinations. Fourteen infants were "found to be definitely abnormal" at 18 months. Three of these 14 were diagnosed as having spastic cerebral palsy and one as having athetosis. A table shows the different symptoms seen in the three spastic babies at the four examinations. It is concluded that when neurological symptoms and "developmental aberrations" are both evaluated, it is possible "to suspect neurologic abnormalities in examination of small infants."

638. Martin, R.H., and Higginbottom, James: "A Clinical and Radiological Assessment of Fetal Age," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 78:155-162, Feb., 1971.

In the first part of this study the thighs of 1454 newborns, having gestational ages of between 30 to 43 weeks, were measured as described. Findings indicated "that linear growth occurs at approximately 3 mm. per week." This data was then used to

assess fetal maturity by measuring the length of the femur of the fetus several weeks before birth. The radiological techniques used are described in detail. Three mm. were added to the radiological measurement "for every week that the pregnancy progressed, and ultimately the thigh was measured in the newborn infant to find out if the radiological measurement was correct." "From this experience it was possible to give an estimate of gestational age by direct measurement of the femur on the radiograph." Results showed that gestational age could be predicted "with a range of accuracy, at worst, of just less than two weeks and, at best, within the actual week of gestation."

639. Masland, Richard L.: "Spastic Diplegia After Short Gestation," *Developmental Medicine and Child Neurology*, 12:127-128, Apr., 1970.

This editorial points out the need for increased investigation into the causes of spastic diplegia in children of short gestation. A recent unpublished analysis by John Churchill and the results of other studies are reported.

640. Massa, T., and Niedermeyer, E.: "Convulsive Disorders During the First Three Months of Life," *Epilepsia*, 9:1-9, Mar., 1968.

"Eighty-two babies ranging from 2 days to 3 months of age and admitted at the John Hopkins Hospital because of seizures" were studied. Etiological, EEG, and follow-up data are presented. "Relatively short follow-up studies demonstrate a fairly high incidence of neurological and intellectual deficits as well as recurrence of seizures. Most notorious in this regard proved to be the group of 'morphological brain damage.' Hence the long-term prognosis of seizures occurring in early infancy is a guarded one."

641. Matheny, Mary Marguerite, and Ruby, Doris Ott: "A Guide for Feeding the Cerebral Palsied Child," *Cerebral Palsy Review*, 24:14-16, Mar.-Apr., 1963.

Feeding the cerebral palsied child from birth is discussed. Ten common disabilities of cerebral palsied children, the feeding difficulties arising from these disabilities, and possible solutions to the feeding difficulties are presented.

642. Mattison, Donald R.: "Amniotic Fluid Osmolality," *Obstetrics and Gynecology*, 36:420-424, Sept., 1970.

Amniotic fluid osmolality was studied by described methods in a group of patients "with fetuses at risk due to hemolytic disease." Osmolality was found to normally decrease as gestational age increased. "An upward excursion of the osmolality was interpreted as signifying fetal and/or placental compromise at the time. The subsequent return of osmolality to normal indicates successful response to compromise by the fetoplacental unit or to the removal of the stress."

643. Maurer, Harold M.; Wolff, James A.; Finster, M.; Poppers, Paul J.; Pantuck, E.; Kuntzman, R.; and Conney, A.H.: "Reduction in Concentration of Total Serum-Bibirubin in Offspring of Women Treated with Phenobarbitone during Pregnancy," *Lancet*, 1:122-124, July 20, 1968.

Concentrations of serum bilirubin were compared for the first four days of life in the infants of 12 pregnant women given phenobarbitone, as described, for two weeks or more before delivery and in 16 control infants. All infants "were vigorous at birth and thereafter." "Serum-bilirubin levels were significantly lower in babies of treated mothers, and maximum serum-bilirubin levels occurred earlier in this group." Reasons for this and implications are discussed.

644. Maurer, Harold M.; Wolff, James A.; and Luke, Koon-Hung: "Phenolsulfonphthalein Binding Capacity of Serum in Newborn Infants," *Journal of Pediatrics*, 74:231-239, Feb., 1969.

In order to study the PSP binding capacity in serum of infants, cord blood was obtained from normal prematures and full-terms, prematures and full-terms with hemolytic hyperbilirubinemia, and prematures and full-terms with non-hemolytic hyperbilirubinemia. Methods and detailed graphic results are presented. The serum dye binding capacity (D.B.C.) was found to be lower in the premature infants and in those with hemolytic hyperbilirubinemia. When albumin was administered intravenously to two prematures with nonhemolytic hyperbilirubinemia, "a rise in D.B.C. with only a transient elevation in bilirubin" resulted. These results and those of others are discussed with regard to "the relationship of the D.B.C. to susceptibility to kernicterus in premature and full-term infants with hemolytic and nonhemolytic hyperbilirubinemia."

645. Becomber, Sara A., and Herman, Richard M.: "Effects of Local Hypothermia on Reflex and Voluntary Activity," *Physical Therapy*, 51:271-282, Mar., 1971.

The use of cold therapy in medicine and, in particular, to relieve spasticity is reviewed. A study, involving four hemiplegic and five paraplegic patients, is described in which "the effect of local cooling on myotatic reflex and voluntary activity of the spastic triceps surae muscle was observed." Findings are reported on the effect of cooling on the tendon jerk responses, on the response to passive stretch, on the response to vibration, and on voluntary contraction. In both groups of subjects, decreased spasticity was noted in that the stretch reflex responses (to ramp movement and to tendon tap) were reduced, nerve conduction time was increased, and the response to vibration was decreased."

646. Medovy, Harry: "New Parameters in Neonatal Growth; Cell Number and Cell Size," *Journal of Pediatrics*, 71:459-461, Sept., 1967.

The current literature on the subject is reviewed, and seven recent "observations" concerning abnormal intrauterine and extrauterine cellular growth are summarized.

647. Michaelis, R.; Schulte, F.J.; and Nolte, Renate: "Motor Behavior of Small for Gestational Age Newborn Infants," *Journal of Pediatrics*, 76:208-213, Feb., 1970.

Twenty-two neonates (Group I) who were small for gestational age and 25 full-term neonates of normal birth weight (Group II) were given a two-part examination. "Part A was a routine pediatric examination" including a standard neurological examination from which a neurological diagnosis was made. Eleven of the infants in Group I were considered to be neurologically abnormal and are described. In Part B of the examination numerous reflexes and "motor automatisms" were elicited, evaluated, and scored as described. Significant differences in motor behavior between the two groups are reported and analyzed.

648. Michell, Guy: "Maternal Deprivation," *Developmental Medicine and Child Neurology*, 5:42-44, Feb., 1963.

In this paper certain of the issues involved in this subject are summarized with particular reference to information contained in a review article by Mary Ainsworth in the World Health Organization's

volume, *Deprivation of Maternal Care: A Reassessment of Its Effects*, published in 1962. Summarized are "the current view of attachment behavior, changes observed in institutionalized infants, and two studies investigating differences between infants in homes and in institutions. Some commonly confused terms are defined.

649. Michie, Eileen A.: "Urinary Oestriol Excretion in Pregnancies Complicated by Suspected Retarded Intrauterine Growth, Toxaemia, or Essential Hypertension," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 74:896-901, Dec., 1967.

Urinary estriol values were measured in pregnant women having the above conditions. Results are presented and discussed. Such measurements were found to be of value in diagnosing severe intrauterine growth retardation and "in assessing foetal-placental impairment" in cases of severe toxemia. The condition of "essential hypertension alone does not particularly affect oestriol excretion."

650. Milani-Comparetti, A.: "Indications for Residential Treatment in the Early Years of Life," *Developmental Medicine and Child Neurology*, 5:159-161, Apr., 1963.

The problem is defined as being one of fulfilling the two basic needs of the young spastic child - family love and early treatment. The importance of the latter need is stressed. Home and very frequent outpatient treatment is strongly advocated, but residential treatment is fundamentally indicated in two types of cases: (1) cases in which the family is not able to help with treatment, and (2) cases in which the needed treatment facilities can only be provided in the institution. When outpatient facilities are not available, the decision for or against residential treatment must be made on an individual basis. The author feels that certain spastic children would suffer particular harm from residentail care.

651. Milani-Comparetti, A., and Gidoni, E.A.: "A Graphic Method of Recording Normal and Abnormal Movement Patterns," *Developmental Medicine and Child Neurology*, 10:633-636, Oct., 1968.

A study was conducted to examine the Benesh Movement Notation Method as a means of recording motorscopic data. In this procedure, observed movements are symbolically plotted on a five-line staff

by a trained choreologist. The method was used to record about 5,000 separate patterns of movement and posture in normal children and adults, and in cerebral palsied children. Conclusions from this study are presented.

652. Milani-Comparetti, A., and Gidoni, E.A.: "Pattern Analysis of Motor Development and Its Disorders," *Developmental Medicine and Child Neurology*, 9:625-630, Oct., 1967.

Normal children gradually acquire a large variety of motor patterns but children with cerebral palsy are restricted in the development of motor patterns because of damage to the nervous system. The view is firmly expressed that the "motoscopic examination," or analysis of motor patterns, should be included in the neurodevelopmental examination of the infant. In this procedure both spontaneous motor movement and pattern movement resulting from stimuli are observed. Although many muscle patterns have not been clearly defined, it is felt that pattern analysis in cerebral palsy has resulted in earlier, more consistent, and more reliable diagnosis.

653. Milani-Comparetti, A., and Gidoni, E.A.: "Routine Developmental Examination in Normal and Retarded Children," *Developmental Medicine and Child Neurology*, 9:631-638, Oct., 1967.

Because of the length and number of routine developmental examinations, it is often necessary to select some developmental area for concentrated evaluation. The parameter of "standing" is proposed as a significant area for examination because of the limited number of specific reactions or reflex structures essential to the function. Discussed are the righting reactions, the parachute reactions, the tilting reactions, and the primitive reflexes. A chart with notes designed to facilitate easy recording of these developmental reactions in young children is included. A revised chart is published in *Developmental Medicine and Child Neurology*, 9:766, Dec., 1967.

654. Miles, Phillip A., and Pearson, Jack W.: "Amniotic Fluid Osmolality in Assessing Fetal Maturity," *Obstetrics and Gynecology*, 34:701-706, Nov., 1969.

By described methods determinations of the osmolality of amniotic fluid were made in 57 normal and 19 abnormal pregnancies between 29-43 weeks of gestation. Criteria for both types of pregnancy are listed. Osmolality was seen to decrease as gestational age

increased. Except for two cases, no differences in osmolality between the normal and the abnormal pregnancies could be detected. Such a method is felt to be of value in assessing fetal maturity.

655. Miller, Brewster S.: "Current Research in Prevention and Treatment of Cerebral Palsy and Related Cerebral Dysfunction," *Journal of Rehabilitation*, 32:13-26, Sept.-Oct., 1966.

In this paper the program of the United Cerebral Palsy Association is summarized. The objectives of the agency and the four areas in which research is being concentrated are listed. These four are "prematurity; blood type incompatibility, bacterial and viral infections, and clinical management of labor and delivery." Numerous research studies in the area of prevention are described, including work relating to prenatal factors, a German measle vaccine, nerve tissue regeneration, acute oxygen deficiency, measles encephalitis, and "pseudo retardation."

656. Miller, J.A., Jr.; Miller, F.S.; and, Westin, B.: "Hypothermia in the Treatment of Asphyxia Neonatorum," *Biologia Neonatorum*, 6:148-163, 1964.

Studies of mammals, in which was demonstrated the protective effect of hypothermia before or during asphyxiation and the added benefit of administering nembutal or chlorpromazine before the cooling process, are reviewed. Also reported are the results of using hypothermia with human asphyxiated infants. In 65 severely depressed cases in which hypothermia was employed, 13 died and 52 infants survived. Data on both groups are presented. "Thus far, all 52 infants have been found to be within normal ranges for growth, motor and speech development." In the author's two series of asphyxiated infants "it is significant that in none of the infants has there been evidence of cerebral palsy."

657. Miller, James A., Jr.: "New Approaches to Preventing Brain Damage During Asphyxia," *American Journal of Obstetrics and Gynecology*, 110:1125-1133, Aug., 15, 1971.

Several studies are presented to suggest new such approaches, with the use of hypothermia emphasized. One hundred per cent of the kittens, rabbits, and puppies asphyxiated spontaneously recovered from twice the lethal exposure at 15° C. "In cesarean-delivered monkeys, cooling begun 2 minutes after last gasp prevented brain

damage from asphyxia." The beneficial metabolic effects of cooling are described as are cardiovascular and acid-base studies. The combination of tris hydroxymethyl aminomethane (tham), glucose, and hypothermia have produced "the longest survivals during asphyxia yet achieved." The question of when cooling should be initiated in the asphyxiated infant is considered, studies on primates are reported, and the use of intra-arterial transfusions for asphyxia is discussed. "Human trials are encouraging, and it is now suggested that infants with Apgar scores of 3 or less be cooled immediately after birth while receiving artificial respiration and other resuscitative measures."

658. Miller, James A., Jr., and Miller, Faith S.: "Studies on Prevention of Brain Damage in Asphyxia," *Developmental Medicine and Child Neurology*, 7:607-619, Dec., 1965.

The authors state the belief that at the present time the problem of cerebral palsy is best approached by searching "for methods of prevention rather than attempting to cure a condition which is essentially incurable." Studies on animals and on humans that have tested the hypothesis that cooling of asphyxiated newborns decreases death and brain damage are reported. Findings are listed and discussed. Although clinical trials have been too few to establish conclusions, the authors predict that when hypothermia is induced in the process of resuscitating infants, "fewer deaths from asphyxia neonatorum, fewer cerebral palsies, and higher I.Q. scores" will result.

659. Miller, Maurice H.: "Neonatal and Infant Auditory Screening Programs; An Evaluation of Their Current Status," *Clinical Pediatrics*, 9:340-345, June, 1971.

General factors related to the screening of hearing in children are briefly considered. The advantages of detecting communication disorders in infancy are listed. The method of Downs, et al is described as an infant screening approach that is commonly used, and the work of Eisenberg, et al in identifying factors that can influence auditory testing responses is praised. These factors are listed. The limitations of the Downs method in terms of these factors and false positive and false negative test results are presented. It is also pointed out that otitis media is not detected by such methods. In summarizing, 7 "major obstacles" in the usage of a "3000 Hz stimulus presented at a level of 90 dB SPL," as the Downs method is, are listed and conclusions are drawn.

660. Milstein, Jerrold M.: "Hypoglycemia in the Neonate," *Postgraduate Medicine*, 50:91-94, July, 1971.

The condition is described and is considered to be "not only a diagnosis but also a symptom, and definite diagnosis is essential." "Transient hypoglycemia" is differentiated from "prolonged and recurrent hypoglycemia" with the known causes of both discussed. Treatment is also briefly described.

661. Misenhimer, Harold R.: "Amniotic Fluid Analysis in Prenatal Diagnosis of Erythroblastosis Fetalis," *Obstetrics and Gynecology*, 23:485-493, Apr., 1964.

Amniotic fluid samples were obtained during the last trimester of pregnancy in 19 isoimmunized patients. "In 17 of the 19 patients, an accurate antepartum prediction of the status of the fetus has been made." Cases are described, problems are discussed, and "Conclusions" are listed.

662. Mitchell, Ross G.: "The Landau Reaction (Reflex)," *Developmental Medicine and Child Neurology*, 4:65-70, Feb., 1962.

To clarify opinion differences concerning this reflex, an attempt is made to answer the following questions: (1) "What is the Landau reaction?" (2) "At what age is it normally present?" and (3) "What is the mechanism involved?"

663. Mitchell, Ross G.: "The Moro Reflex," *Cerebral Palsy Bulletin*, 2:135-141, 1960.

The movements involved in this reflex as it is elicited in the neonate and methods of eliciting the reflex are described. Also of concern are the age at which the reflex normally disappears or "matures," the significance the reflex has clinically, its physiological meaning, and the relationship of the Moro reflex to other reflexes.

664. Mitchell, Ross G.: "The Prevention of Cerebral Palsy," *Developmental Medicine and Child Neurology*, 13:137-146, Apr., 1971.

After explaining the complexity of the subject, the author presents and discusses three objectives of prevention in regard

to cerebral palsy. The first is termed "primary prevention" and is concerned with the prevention of "situations arising which might predispose to cerebral palsy" such as prematurity. The second objective is "secondary prevention" in which cerebral palsy is prevented when the "predisposing condition" exists. Discussed in this regard are the conditions of hypoxia, hypoglycemia, hyperbilirubinemia, hypernatremia, and conditions occurring after the neonatal period. "Tertiary prevention" is the third objective and applies to the situation "when a motor disorder resulting from cerebral dysfunction is inevitable." The aim in this case is to minimize the disorder as much as possible "and to prevent or reduce resultant disability" by early identification, therapy, and other measures.

665. Montagu, M.F. Ashley. *Prenatal Influences*. Springfield, Illinois: Charles C. Thomas, 1962. 614 pp.

The author's concern in this volume is with the human life in the womb and with the many factors that influence its subsequent growth and development. "It often deals with what has gone wrong with the organism in the womb and why." The process of prenatal growth and the development and function of the placenta is traced. Several chapters deal with the many maternal influences, such as nutrition, age, emotions, infections, use of drugs, etc., which effect the prenatal environment. Discussed in other chapters are the effects on the fetus or infant of anoxia, prematurity, Cesarean section, postmaturity, multiple pregnancy, outside physical stimuli, and various sources of radiation. The birth process and its effects on the infant are analyzed. Many studies are reported within the text, and a lengthy bibliography is included.

666. Moore, W.M.O.; Murphy, P.J.; and Davis, J.A.: "Creatinine Content of Amniotic Fluid in Cases of Retarded Fetal Growth," *American Journal of Obstetrics and Gynecology*, 110:908-910, Aug. 1, 1971.

Amniotic fluid and maternal serum specimens were obtained during the last trimester of pregnancy from 13 mothers of babies having normal birth weights and from 8 mothers of babies having retarded fetal growth, determined as described. Findings "are expressed as the excess of amniotic fluid creatinine above the values in maternal serum at different stages of gestation" and "reveal that amniotic fluid creatinine concentration is not a reliable index of maturity if the fetus is small for gestational age because low values occur." "While low creatinine values are indicative

of prematurity when fetal growth is normal, such values may be associated with maturity when the fetal growth is retarded."

667. "More Oxygen during Cesarean Section Results in Healthier Neonates," *Journal of the American Medical Association*, 214: 1634-1635, Nov. 30, 1970.

In a study at the Albert Einstein College of Medicine, New York City, sixty-five healthy women who underwent elective Cesarean section were divided into five groups and "breathed varying concentrations of oxygen during delivery." The higher concentrations produced "higher oxygen saturation content, and tension in the blood of the infants;" "higher Apgar scores;" and "reduced mean time for the infants to achieve sustained respiration."

668. Morgan, Jacqueline A.; Gyepes, Michael T.; Jones, Margaret H.; and Desilets, Donald T.: "Barium-Impregnated Chocolate Fudge for the Study of Chewing Mechanism in Children," *Radiology*, 94:432-433, Feb., 1970.

Described is the use of such a 'contrast agent' to enable the cineradiographical evaluation of swallowing deficits in cerebral palsied children. The recipe for the fudge is given and other possible uses of this technique are mentioned.

669. Morgenstern, F.S.: "Facilities for Children's Play in Hospitals," *Developmental Medicine and Child Neurology*, 10:111-114, Feb., 1968.

Play facilities for hospitalized children should be designed to claim the child's attention, provide numerous stimuli, and be arranged to encourage social interaction. Play provisions for children in bed and for those with restricted movement, indoor playrooms, and outdoor play areas are discussed. Staff interest in play activities is important.

670. Morgenstern, F.S.: "Psychological Handicaps in the Play of Handicapped Children," *Developmental Medicine and Child Neurology*, 10:115-120, Feb., 1968.

Lack of curiosity and motivation, perceptual difficulties, and distractability are psychological handicaps often seen in the

mentally or physically handicapped child. These factors limit the child's capacity to play and to benefit from play experiences. Adult praise is an important influence. Use of the teaching machine to develop play in young handicapped children is suggested.

671. Morris, E. David, and Beard, R.W.: "The Rationale and Technique of Foetal Blood Sampling and Amnioscopy," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 72:489-495, Aug., 1965.

The disadvantages of other methods of assessing fetal condition are mentioned, and the methods of amnioscopy and fetal blood sampling are explained.

672. Morris-Jones, P.H.; Houston, I.B.; and Evans, R.C.: "Prognosis of the Neorological Complications of Acute Hypernatraemia," *Lancet*, 2:1385-1389, Dec. 30, 1967.

Fifty children in whom a hypernatremic episode had occurred between the period of infancy to 10 years of age were "investigated to determine the immediate effects and long-term sequelae of their episode." Ten of the children (20%) died at the time of the episode. Thirty-two of the 40 survivors were followed and examined 12 to 63 month following the episode. "Twelve (37%) of these had abnormalities on neurological examination, intelligence testing, or electroencephalography; in several, however, the abnormalities were probably unrelated to the earlier hypernatraemia, and only three out of 32 (9%) had both related and symptomatically important lesions." The literature is reviewed and possible implications are discussed.

673. Motoyama, Etsuro K.; Rivard, Guy; Acheson, Fiona; and Cook, Charles D.: "Adverse Effect of Naternal Hyperventilation on the Foetus," *Lancet*, 1:286-288, Feb. 5, 1966.

Although maternal hyperventilation has commonly been used in cases of premature delivery and suspected prenatal distress with the assumption that fetal oxygenation would be improved, results of studies on sheep and reanalysis of data on humans are described in which a correlation was found between "hyperventilation and hypocapnia of the mother and a reduction in foetal oxygenation."

674. Muller, Paul F.; Campbell, H. Edwin; Graham, William E.; Brittain, Harry; Fitzgerald, Joseph A.; Hogan, Michael A.; Muller, Victor H.; and Rittenhouse, A.H.: "Perinatal Factors and Their Relationship to Mental Retardation and Other Parameters of Development," *American Journal of Obstetrics and Gynecology*, 109:1205-1210, April 15, 1971.

In a described retrospective study, the obstetrical records of 1698 children who were age nine in 1965 were studied as described. Physical and mental development of these children was then assessed by the administration of the Large-Thorndike intelligence test and by sending questionnaires to the parents, the doctors, and the school principals of these children. Correlations between obstetrical factors and developmental data were then made with the methods explained. "Several statistically significant correlations were established. Advanced age of the mother, breech presentation, premature rupture of the membranes, and prematurity were all found to have a statistically significant deleterious effect." A discussion follows the article.

675. Murphy, John F., and Mulcahy, Risteard: "The Effect of Age, Parity, and Cigarette Smoking on Baby Weight," *American Journal of Obstetrics and Gynecology*, 111:22-25, Sept. 1, 1971.

Studied in 10,692 mothers were "the effects of maternal age, parity, and cigarette smoking on baby weight." Results concerning each of these three factors are reported. It was found that "maternal age and parity have no singificant effect, but cigarette smoking is associated with a highly significant reduction in baby weight." "The effect of smoking is dose-related up to a consumption of 10 to 12 cigarettes per day." Possible explanations are considered including the high level of carboxyhemoglobin that has been found in the blood of cigarette smoking mothers and their fetuses.

676. Murphy, P.J.: "The Estimation of Fetal Maturity with Retarded Intrauterine Growth," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 76:1070-1074, Dec., 1969.

The reasons for desiring to know the fetal maturity in a "suspect pregnancy" are mentioned. Fetal maturity was assessed by several methods in 24 antenatal cases in which there was "clinical evidence of retarded intrauterine growth," in order to determine the value of each of these methods in estimating fetal maturity in cases such as these. The parameters used "were the gestational maturity, uterine size, radiology, volumetric estimation of the

liquor volume and amniotic fluid cytology" and a postnatal neurological assessment. None of the babies were born prematurely "by the generally accepted definition." Results concerning the found value of each method are presented.

677. Myers, Ronald E.; Beard, Richard; and Adamsons, Karlis: "Brain Swelling in the Newborn Rhesus Monkey Following Prolonged Partial Asphyxia," *Neurology*, 19:1012-1018, Oct., 1969.

Ten near-term monkey fetuses were progressively asphyxiated experimentally as described. Electrocardiographic, cardiovascular, blood chemical and gross brain morphological changes were recorded and are reported in a table. "Mild to moderate degrees of brain swelling" were noted in 7 of the 10 fetuses. "The degree of brain swelling correlated best with the length of hypoxia, hypercarbia, and pH below 7." Implications are considered.

678. Myers, William A. *Learning Systems for Preschool Physically Handicapped Children: A Training Program.* Austin, Texas: University of Texas, Program for Staff Training of Exemplary Early Childhood Centers for Handicapped Children, [1971]. 24 pp. (Distinguished Staff Training Monograph Series Vol. II, No. 3.)

Discussed in detail in this monograph are two items which are important factors in the basic philosophy of "learning systems for preschool physically handicapped children." These are "communication systems and educational goals and procedures as they relate to all personnel associated with each handicapped youngster." Workable communication systems must be devised among the staff, between the staff and the child's family, and between the staff and the formal school the child will attend. "Several basics of teaching procedure" are considered including the importance of the influence of the child's environment, the child's motivation, the early reinforcement of success, the setting of realistic goals, the active involvement of the child in his environment, etc. Also described are characteristics of learning which are "particular to the physically handicapped." The concepts discussed are summarized, and a chart is presented and explained which "outlines a possible training approach for the education of professionals working with handicapped children." A bibliography and information about the author are included.

679. Mysak, Edward D. *Neuroevolutional Approach to Cerebral Palsy and Speech.* New York: Teachers College, Columbia University, 1968. 114 pp.

This is a revised and enlarged edition of the author's *Principles of a Reflex Therapy Approach to Cerebral Palsy* published in 1963 (see below). Information on this approach to therapy has been updated and the consideration of speech and speech therapy in cerebral palsy has been expanded. An index has also been added.

680. Mysak, Edward D. *Principles of a Reflex Therapy Approach to Cerebral Palsy.* New York: Bureau of Publications, Teachers' College, Columbia University, 1963. 56 pp.

The theoretical background, the principles, and the procedures of the reflex therapy approach to the treatment of cerebral palsy are presented. "Human evolutional reflexology" is reviewed, and considerations for implementing reflex therapy programs are discussed. The results of a pilot study to experimentally examine the techniques of reflex therapy are reviewed. The appendices include a "Table of Reflexive Maturation and Motor Development" and sample forms used in recording examination information.

681. Mysak, Edward D., and Fiorentino, Mary R.: "Neurophysiological Considerations in Occupational Therapy for the Cerebral Palsied," *American Journal of Occupational Therapy,* 15:112-117, May-June, 1961.

The specific purpose of the paper is to discuss the theoretical and practical significance of utilizing the basic principles of the Bobath approach in occupational therapy for the cerebral palsied. Previous to fulfilling this purpose, the neurophysiological viewpoint of cerebral palsy treatment is introduced and the "basic concepts of the Bobath approach" are presented.

682. Nabors, G.C.: "Maternal Age and Parity in Relation to Cerebral Palsy in Their Infants," *Southern Medical Journal,* 56:282-285, Mar., 1963.

Maternal age and parity were studied in 382 cases of cerebral palsy. Cerebral palsy was found to occur most frequently in the offspring born to women over the age of 35, except primigravidas. "Specific types of cerebral palsy are not related to age or parity of the mother."

683. Nabors, G.C.: "Problems Associated with Determining the Etiology of Cerebral Palsy," *American Journal of Obstetrics and Gynecology*, 79:932-937, May, 1960.

It is noted that obstetricians should be encouraged to be more aware of cerebral palsy and more thorough in the recording of data which would be helpful in determining etiology. Obstetricians are in a position to more closely define etiological features. Another problem occurs when other staff members of a cerebral palsy clinic attempt to evaluate data best studied by the obstetrician. The helpfulness of the obstetrician in assessing etiological factors is illustrated by a reported study.

684. Naeye, Richard L.: "Malnutrition; Probable Cause of Fetal Growth Retardation," *Archives of Pathology*, 79:284-291, Mar., 1965.

When autopsy results were compared in 11 infants having had fetal growth retardation and in 7 infants having had alimentary malnutrition, many similarities in organ structure were noted and are reported. "This similarity of abnormalities in the two groups suggests malnutrition as a common cause for their growth retardation. Placental abnormalities in the prenatally retarded infants suggest an etiology for their malnourished state. Both groups have organ abnormalities which help to explain disturbances in carbohydrate metabolism and subsequent abnormalities in physical and mental growth."

685. Naeye, Richard L., and Kelly, John A.: "Judgment of Fetal Age. III. The Pathologist's Evaluation," *Pediatric Clinics of North America*, 13:849-862, Aug., 1966. (Series: For I see #555, II see #974.)

Numerous parameters used to judge fetal maturity are discussed, including body weight, body length, head circumference and brain weight, cell size and cell number, and the maturity of individual organs such as the heart, lungs, kidney, adrenals, nervous system, etc. "Unfortunately, many of these parameters fall when most needed because they themselves are often abnormal for gestational age in disorders in which prenatal growth is abnormal."

686. National Research Council. Committee on Maternal Nutrition. *Maternal Nutrition and the Course of Pregnancy*. Washington, D.C.:

National Academy of Sciences, 1970. 241 pp.

This volume contains the report of the above Committee. Listed in the Preface are the topics considered by the Committee and the reference to the chapter in which each topic is considered. Of particular pertinence to this bibliography are: (1) Chapter 2, which is a review article, entitled "The Epidemiology of Human Reproductive Casualties with Emphasis on the Role of Nutrition" written by Earl Siegal and Naomi Morris, and (2) Chapter 5, which is a report of a "Working Group," entitled "Relation of Nutrition to Fetal Growth and Development." Recommendations made by the Committee are listed in Chapter 8. Included is a lengthy, subject divided bibliography. A summary of this report is available from the National Academy of Sciences.

687. Neber, William A.; Flowers, Charles E., Jr.; Jones, O. Hunter; Peete, Charles H.; Pearse, Richard L.; and Summerlin, Arthur R.: "Obstetric Factors in Cerebral Palsy, A North Carolina Study," *North Carolina Medical Journal*, 23:329-335, Aug., 1962.

Records of 79 cases of cerebral palsy in North Carolina "were analyzed in a retrospective study of obstetric factors related to the etiology" as a means of "interesting obstetricians in cerebral palsy" and to investigate possible "preventable obstetric factors in its etiology." Findings are reported regarding the types of cerebral palsy studied, the sex and racial distribution, the number of cases that involved premature birth, the number of full-term cases, the time of the onset of symptoms, and the incidence of mental deficiency. Principle findings are listed in the "Summary" and "Conclusions" which indicate that "proper exchange of information among obstetricians could help eliminate some of the obstetric factors which are associated with these conditions."

688. Negrin, Juan: "Local Hypothermia of the Spinal Cord for Relief of Spasticity and Rigidity: Preliminary Observations," *Archives of Physical Medicine and Rehabilitation*, 47:169-173, Mar., 1966.

Local hypothermia and its use with eight cerebral palsied cases are described. "These findings seem to indicate that local hypothermia of the spinal cord in patients with spasticity can result in lessening or disappearance of spasticity." The advantages of the method are listed, and theoretical and physiological aspects of local hypothermia are discussed.

689. Neligan, G.A.: "The Clinical Effects of Being 'Light for Dates'," *Proceedings of the Royal Society of Medicine*, 60: 881-883, Sept., 1967.

The diagnosis of 'light for dates' is discussed as are the increase in neonatal mortality in such infants, the association of the condition with hypoglycemia, morbidity in such infants, and the possible association of malnutrition with the condition. Also presented are preliminary results of a study by the author and his colleagues in which babies in the Newcastle Maternity Survey of 1960-62 were followed to the age of five years. "These results confirm the existence of a tendency for 'light for dates' babies to show inferior subsequent development." Two other short papers on the subject of "The 'Small for Dates' Baby" precede Dr. Neligan's article. The first by James Walker is entitled "'Small for Dates' - Clinical Aspects" and the second by J.S. Wigglesworth is entitled "Pathological and Experimental Aspects of Foetal Growth Retardation."

690. Neligan, G.A.: "Hypoglycaemia in the Newborn," *Proceedings of the Royal Society of Medicine*, 57:1059-1061, Nov., 1964.

The condition, its treatment, its occurrence in infants of low birth weight, probable causes of clinical symptoms, and the risk of brain damage are considered.

691. Neligan, Gerald A.; Robson, Evelyn; and Watson, Joseph: "Hypoglycemia in the Newborn; A Sequel of Intrauterine Malnutrition," *Lancet*, 1:1282-1284, June 15, 1963.

Blood sugar levels were obtained shortly after birth and studied in 33 newborns who were "poorly nourished at birth as judged by a low rating on a weight/maturity scale" and in 33 well-nourished neonates. Methods are described. All the infants were free from symptoms of hypoglycemia. The blood sugar levels in the former cases were found to be significantly lower than in the later group of cases. Out of 12 cases of symptomatic hypoglycemia, previously detected by the authors, 11 would have been included in the poorly nourished group. Implications are discussed.

692. Nelson, George H., and Freedman, Donald S.: "Relationship Between Amniotic Fluid Triglyceride Levels and Fetal Maturity," *American Journal of Obstetrics and Gynecology*, 111:930-933, Dec. 1. 1971.

One hundred samples of amniotic fluid were studied in order to determine the value of triglyceride level as an indicator of fetal maturity. Results described relationships found between triglyceride concentration and estimated gestational age and estimated fetal weight. Correlations were also made "between high triglyceride concentrations and other tests for fetal maturity." Although high triglyceride levels were generally revealed near term, low triglyceride levels were not found to be of prognostic significance. "As a test for fetal maturity, amniotic fluid triglyceride determination offers no advantage over the standard amniotic fluid analyses; however, this determination may be useful as an additional parameter upon which intelligent decisions of intervention can be made."

693. Nelson, Karin B.: "The 'Continuum of Reproductive Casualty,'" in *Studies in Infancy*, based on a study group held at Oxford, September, 1966; edited by Ronald MacKeith and Martin Bax. London: Spastics International Medical Publications in association with Heinemann Medical Books, 1968. Pp 100-109. (Clinical on Developmental Medicine, No. 27.)

In this article the "validity and current utility" of the hypothesis of the 'continuum of reproductive casaulty' are reviewed. The hypothesis is explained and discussed. Numerous clinical studies are described with those concerned with the conditions of cerebral palsy, epilepsy, mental deficiency, and behavior and learning disorders considered under those headings. Conclusions regarding the hypothesis are discussed.

694. Nelson, T.C.: "The Relationship between Melena and Hyperbilirubinemia in Mature Neonates," *Biologia Neonatorum*, 8:267-273, 1965.

Serum bilirubin levels were assessed in 28 full term newborns with melena and compared to those of 46 normal newborns. Methods are described. Much higher levels were found in the infants with melena. "The probable cause of this hyperbilirubinemia in melena is erythrocyte destruction and eventual absorption of bilirubin in the gastro-intestinal tract."

695. Nesbitt, Robert E.L., Jr., and Aubry, Richard H.: "High Risk Obstetrics. II. Value of Semiobjective Grading System in Identifying the Vulnerable Group," *American Journal of Obstetrics and Gynecology*, 103:972-985, Apr. 1, 1969. (Series: For I see #31, III see #32, IV see #721, V see #33, VI see #250.)

Described is a method used to score obstetrical ward patients on certain adverse factors. An index score sheet is displayed. The score, computed at the first prenatal visit, is the numerical value resulting after the sum of all penalties (adverse factors) in eight categories has been subtracted from a perfect score of 100. No adjustment in score is made during pregnancy. One thousand and one ward patients, scored by this method, were grouped on the basis of results into three risk categories: high (299), moderate (390), and low (312). Detailed results are presented in 11 tables including ones on perinatal outcome and causes of perinatal mortality and morbidity. "In general, the risk of antenatal and intrapartum complications as well as poor perinatal outcome among the low scoring patients...was twice as great as that observed in the remaining 71% of the patients. With limitations and modification needs being noted, it is concluded that use of such an index has merit as a screening device for prenatal patients in order that the high risk patient may receive concentrated attention.

696. Neuman, M.R.; Critchfield, F.H.; and Lin, W.C.: "An Intravaginal Fetal ECG Telemetry System," *Obstetrics and Gynecology*, 35: 96-103, Jan., 1970.

The value of continuous monitoring of the fetal heart rate to detect fetal distress is stated, and "the basic requirements for such a monitoring system" are listed. A radio telemetry system that utilizes "a microelectronic transmitter placed intravaginally" and that meets these requirements is described. The method has been found to be reliable and has been used in both a large research hospital and a community hospital.

697. Newcomb, Mary Ann: "Seal Bluff Development Center," *Children's House*, 5:1:13-19, August, 1971.

The functioning of this Center for multihandicapped infants, located in Contra Costa County, California, is described. After an infant is referred, a home visit is made by a medical social worker, and the infant and his parents come to the Center for complete evaluation. The child is then seen regularly as an

outpatient, and a "home visitor" is assigned to the case. The importance of the role of these volunteer visitors and their training are explained. They fulfill the need for immediate intervention before the infant is able to attent the Center full time. At any one time 12 infants attend the Center on a six-hour daily program. They are discharged at the age of three years to attend various other schools. The philosophy and aspects of the curriculum of the Center are described.

698. Newman, L.R.: "Phototherapy in the Prevention and Treatment of Neonatal Hyperbilirubinemia," *Journal of the Albert Einstein Medical Center*, 17:30-35, 1969.

A study was conducted with the purpose of proving the breakdown of bilirubin in well premature infants by using artificial blue light. The experimental group began exposure within 12 hours of birth for a total of 144 hours. Bilirubin levels for both experimentals and controls were obtained after birth and daily for six days. The results indicate that phototherapy was an effective and harmless method for preventing and treating neonatal hyperbilirubinemia.

699. "New Test Checks Opticokinetic Response of Neonate," *Journal of the American Medical Association*, 197:13:42, Sept. 26, 1966.

A simple test in which "a bobbing, swinging red rubber ball" is "dangled from a rubber band in front of the neonate's face" is presented and demonstrated. The technique is felt to provide evidence of an intact nervous system based on an alert response by the neonate. The method has been used at the Children's Hospital and Medical Center and at the Lying-in-Hospital in Boston. It is stressed that a poor visual response "does not necessarily indicate a poor prognosis."

700. Nielsen, Helle H.: "Psychological Appraisal of Children with Cerebral Palsy: A Survey of 128 Re-assessed Cases," *Developmental Medicine and Child Neurology*, 13:707-720, Dec., 1971.

A retrospective study of "the test-retest reliability of intelligence evaluation of 128 cerebral palsied children" is described. "The mean age at initial testing was 3.9 years and at final testing 7.9 years." The subjects, the eight tests used, and the methods of analysis are explained and results and conclusions are

presented. The findings indicate "that a large proportion of children with cerebral palsy can be assessed with reasonable accuracy at a relatively early age by commonly applied evaluation methods; children with neurological and intellectual deficits may be expected to show at least the same, if not a higher degree of IQ stability than non-damaged children."

701. Niswander, Kenneth R.; Capraro, Vincent J.; and Van Coevering, Russel J.: "Estimation of Birth Weight by Quantified External Uterine Measurements," *Obstetrics and Gynecology*, 36:294-298, Aug., 1970.

Two methods for "quantifying simple external uterine measurements" are described and were employed on two groups of women near term. The methods were not found to be accurate in estimating birth weight.

702. Niswander, Kenneth R.; Friedman, Emanual A.; Hoover, David B.; Pietrowski, Helen; and Westphal, Milton C.: "Fetal Morbidity Following Potentially Anoxigenic Obstetric Conditions. I. Abruptio Placentae," *American Journal of Obstetrics and Gynecology*, 95:838-845, July 15, 1966. (Series: For II see #703, III see #704.)

Reports are made in this and the two following articles on investigations undertaken to determine relationships between morbidity and the obstetrical conditions of abruptio placentae, placenta previa, and prolapse of the umbilical cord, respectively. Records from 17,265 cases in the Collaborative Project were studied. In this first study, the authors found 199 documented cases of abruptio placentae. Relationships found between this condition and race, parity, maternal age, pregnancy duration, toxemia, and fetal loss are described. Fifty-two per cent of these infants weighed less than 2,500 grams. Based on Apgar scores, the neonatal conditions of the infants "was frequently precarious," with the condition of the prematures being worse than the mature infants. Data is presented on examinations given at birth, 4 months, 8 months, and 1 year of age, and implications are considered. The predictability in this study of the Apgar score is also discussed.

703. Niswander, Kenneth R.; Friedman, Emanuel A.; Hoover, David B.; Pietrowski, Helen; and Westphal, Milton: "Fetal Morbidity Following Potentially Anoxigenic Obstetric Conditions. II.

Placenta Previa," *American Journal of Obstetrics and Gynecology*, 95:846-852, July 15, 1966. (Series: For I see #702, III see #704.)

Using the records of 17,265 cases in the Collaborative Project, the authors undertook an investigation primarily to determine whether the anoxia frequently associated with placenta previa increased the risk of neurological damage to both premature and mature infants. One hundred three cases of placenta previa were found. Relationships discovered between the condition and possible etiological factors are described. The importance of the method of treatment to fetal outcome is also considered. Tables show the incidences of depressed Apgar scores as well as data on postnatal examinations. By one year of age, although the mature placenta previa babies "fared as well" neurologically as the mature controls, the premature placenta previa babies were "much less likely to be normal than the premature baby without placenta previa."

704. Niswander, Kenneth R.; Friedman, Emanual A.; Hoover, David B.; Pietrowski, Helen; and Westphal, Milton: "Fetal Morbidity Following Potentially Anoxigenic Obstetric Conditions. III. Prolapse of the Umbilical Cord," *American Journal of Obstetrics and Gynecology*, 95:853-859, July 15, 1966. (Series: For I see #702, II see #703.)

Using the records of 17,265 cases in the Collaborative Project, the authors undertook an investigation to study the relationship between prolapse of the umbilical cord and later neurological status. Eighty cases of prolapse of the umbilical cord were found. Relationships discovered between this condition and possible etiological factors are described as are the cases of prenatal mortality (27 out of 80). The importance of "active" therapy is discussed. Although both premature and mature babies born following prolapse of the umbilical cord were likely to be depressed as measured by Apgar scores, later examinations showed there children "to fare as well as the controls." The importance of prematurity as a causative factor in neurological damage is emphasized.

705. Niswander, Kenneth R.; Westphal, Milton C.; and Seekree, Swtantarta: "Amniocentesis in Management of the Rh Problem," *Obstetrics and Gynecology*, 30:646-651, Nov., 1967.

The experience of the authors with amniocentesis and intrauterine transfusion is reported. One hundred and sixty-one

amniotic fluid samples were obtained from 74 patients and optical density (ΔCD) was determined with a spectrophometer. A decision was then made on whether or not to transfuse the fetus. Numerous determinations were made at birth on the cord blood of the infants, and clinical condition was assessed. Although the results of spectrophotometer analysis of the samples correlated well with the outcome in the "mildly or moderately ill (erythroblastotic) infants," "in the presence of severe hemolytic disease or hydrops we find poor correlation between the amniotic fluid analysis and the fetal outcome in over 40% of patients." These patients are described.

706. North, A. Frederick, Jr.: "Small-For-Dates Neonates. I. Maternal, Gestational, and Neonatal Characteristics," *Pediatrics*, 38:1013-1019, Dec., 1966.

Compared on 35 variables concerning "maternal and gestational features, perinatal survival, and neonatal complications" were the records from two groups of "small-for-dates" infants (as defined), the records of two groups of "pre-term" infants (as defined) and the records of a group of "average" infants (as defined). The variables are listed, and the results of the individual comparisons are reported. "The group of small-for-dates neonates differed markedly from the pre-term infants in 15 of the 35 variables examined and from the 'average' infants in 31 of the 35 variables examined."

707. Northcott, Winifred: *Staff Training on a State-Wide Basis*. Austin, Texas: University of Texas, Program for Staff Training of Exemplary Early Childhood Centers for Handicapped Children. [1971]. 36 pp. (Staff Training Prototype Series Vol. II, No. 1.)

This material was designed to be used in the accompaniment of slides. Described is the staff training program and other apsects of the UNISTAPS (University of Minnesota, State Department of Education and Minneapolis Public Schools) Exemplary Preprimary Program for Hearing-Impaired Children in Minnesota. In Part I "The Family Oriented, Home-Centered Infant Program for the 0 - 3 1/2 group and the Child-Centered, School-Oriented Program for the 3 1/2 - 6 year olds" are explained. In Part II efforts that have been made to coordinate training programs are described. In the 1 1/2 years the project has been funded two state conferences for professionals and two state conferences for parents have been held. Also listed and discussed are the objectives

and the "general areas of concentration" in "staff training within the Minneapolis preprimary program." Factors on a statewide basis and "within the exemplary preprimary program" that are indicative of the success of this program are listed. Numerous forms used are included.

708. Odell, Gerald B.; Bruce, G.N.; and Rosenberg, Leon A.: "Studies in Kernicterus. III. The Saturation of Serum Proteins with Bilirubin During Neonatal Life and Its Relationship to Brain Damage at Five Years," *Journal of Pediatrics*, 76:12-21, Jan., 1970. (Series: For II see #710.)

A group of 32 children, who had been jaundiced during neonatal life, were given psychometric tests at the age of five years to determine evidence of brain damage. Eighteen were found to be brain damaged; 14 were considered normal. Comparison was made between the presence or absence of brain damage and clinical and lab examinations made during the period of neonatal hyperbilirubinemia. No significant correlations were found between the presence of absence of brain damage and the birth weights, sex, presence or absence of hemolytic disease, exchange transfusion, and the maximum serum bilirubin concentrations. A significant correlation was found between the presence or absence of brain damage and the saturation of the serum proteins with bilirubin during infancy, thus indicating the importance of the saturation index in predicting the risk of CNS damage in infants.

709. Odell, Gerald B.; Cohen, Sanford N.; and Gordes, Ellen H.: "Administration of Albumin in the Management of Hyperbilirubinemia by Exchange Transfusions," *Pediatrics*, 30:613-621, Oct., 1962.

The results of removing bilirubin by simple exchange transfusion were compared to the results when albumin was administered prior to the transfusion in jaundiced infants. The infants, the methods used, and the findings are described. Bilirubin was found to be more efficiently removed when albumin was administered. "The administration of one gram of albumin per kilogram of body weight one to two hours prior to the procedure resulted in the removal by exchange transfusion of an average of 41% more bilirubin per kilogram of birth weight." Other results are reported.

710. Odell, Gerald B.; Cohen, Sanford N.; and Kelly, Patrick C.: "Studies in Kernicterus. II. The Determination of the Saturation of Serum Albumin with Bilirubin," *Journal of Pediatrics*,

74:214-230, Feb., 1969. (Series: For III see #708.)

Described in detail are a method "for estimating the relative concentration of free bilirubin in serum by measurement of the saturation of the carrier, albumin, for bilirubin" and the application of this technique to the sera from neonates having hyperbilirubinemia either due or not due to hemolytic disease. "Infants without hemolytic disease showed a direct correlation between the saturation of their albumin with bilirubin and the bilirubin protein concentration ratio of the serum. Infants with hemolytic disease did not show such a correlation until after they had had an exchange transfusion." It is thus felt that infants at risk of kernicterus can be more precisely selected by using this method.

711. O'Doherty, N.J.: "Neurological Foundations of Motor Behaviour in Infancy," *Physiotherapy*, 57:144-148, April, 1971.

Nine "points fundamental to appreciating the neurological foundations of motor behaviour in infancy" are listed and individually discussed. Considered are "(1) total motor performance," "(2) primitive motor responses," "(3) definitive motor actions," "(4) level of arousal," "(5) dissolution and evolution of items," "(6) method of examination," "(7) use of standard form," "(8) understanding motor dysfunction," and "(9) method of treatment."

712. O'Doherty, Neil: "A Hearing Test Applicable to the Crying Newborn Infant: Preliminary Report," *Developmental Medicine and Child Neurology*, 10:380-383, June, 1968.

A method for assessing hearing in the spontaneously crying newborn is described. Vocalization from the examiner usually produced a quieting response which wasgraded according to the degree of the response. It was concluded that the response may be important in the assessment of cerebral status "if the response is one of attention mediated at the cortical level."

713. "Of Rodents, Men and Memories," *Medical World News*, 11:30, Mar. 13, 1970.

Studies concerned with the development of memory are briefly reported. The importance of environmental stimulation in brain development in stressed.

714. Ogg, H. Lorraine: "Measuring and Evaluating the Gait Patterns of Children," *Journal of the American Physical Therapy Association*, 43:717-720, Oct., 1963.

A technique for measuring the gait of children, which was used in a pilot study involving 33 normal and handicapped children, is presented. In eight described steps, four gait factors are measured and evaluated. The four defined factors are "(1) stride length, (2) dynamic base, (3) angle of foot placement, and (4) step distance." No extensive or expensive equipment is needed. On the basis of the pilot study results, "several conclusions were drawn regarding the gait factors being measured," and these are presented. This technique appeared "to be a valid and useful tool" with regard to measuring the factors defined.

715. Ch, William; Arbit, Jack; Blonsky, E. Richard; and Cassell, Sylvia: "Neurologic and Psychometric Follow-Up Study of Rh-Erythroblastotic Infants Requiring Intrauterine Blood Transfusion," *American Journal of Obstetrics and Gynecology*, 110:330-335, June 1, 1971.

Ten such surviving infants were matched with normal infants of the same ages and were evaluated neurologically, psychometrically, and electroencephalographically as described between the ages of 12 to 54 months. Data on the studied children as young infants and at follow-up are given. Results indicated no significant differences between the two groups. "These results suggest that severe Rh-erythroblastotic infants who received intrauterine blood transfusions have a normal developmental performance at a later age."

716. O'Leary, James A., and Feldman, Martha: "Amniotic Fluid Osmolality in the Determination of Fetal Age and Welfare," *Obstetrics and Gynecology*, 36:525-527, Oct., 1970.

In the reported study involving 225 normal and high rish pregnancies, the determination of amniotic fluid osmolality was found to be of "no clinical value in assessing fetal age or welfare."

717. Oppe, Thomas E.: "Risk Registers for Babies," *Developmental Medicine and Child Neurology*, 9:13-21, Feb., 1967.

Critically examined in this article are the principles of the at-risk concept for the early detection of handicapped children. The results of an effort to assess the value and usage of the "at-risk registers" then organized in Britain (1967) are reported. Revised criteria are outlined as a result of the assessment. These new criteria are suggested in an attempt to clarify terms of inclusion and to reduce the number of infants placed at risk.

718. Ose, Toru; Tsuruhara, Tsuneo; Araki, Masayoshi; Hanaoka, Toshiyuki; and Bush, Ovid B., Jr.: "Follow-Up Study of Exchange Transfusion for Hyperbilirubinemia in Infants in Japan," *Pediatrics*, 40:196-201, Aug., 1967.

A questionnaire was sent in 1964 to the parents of 157 consecutive neonatal patients who had received 251 exchange transfusions for hyperbilirubinemia since December, 1957 to determine the status of the child and to ask that the child be brought for examination. Ninety-four and two-tenths per cent of these children were followed-up including 17 who had died. Results are reported concerning the causes of the hyperbilirubinemia, the incidence of cerebral palsy, the developmental testing results, the realtionship found between the height of the bilirubin level and developmental retardation, the relationship between serum bilirubin levels and brain damage, and the relationship between the cause of the hyperbilirubinemia and brain damage. "Ninety per cent of the patients who had a bilirubin level of 35 mg/100 ml and above either died or had cerebral palsy or physical retardation." Of the 131 living cases followed, "there were 17 (13.0%) patients who had definite cerebral palsy, 21 (16.0%) who were physically retarded, and 93 (71.0%) who were normal." It was felt that the results indicated "a definite relation between the height of the bilirubin and the development of cerebral palsy and/or developmental retardation."

719. Osofsky, Howard J.: "Antenatal Malnutrition: Its Relationship to Subsequent Infant and Child Development," *American Journal of Obstetrics and Gynecology*, 105:1150-1159, Dec. 1, 1969.

An overview of current knowledge, based on "the hypothesis that malnutrition prior to birth relates to subsequent and specific developmental problems," is presented. Animal and human studies in the area are reviewed with the difficulties involved in human studies noted. Conclusions and implications are given.

720. Osofsky, Howard J.; Long, Robert E.; O'Connell, Edward J., Jr.; and Marshall, Linda D.: "Estrogen Excretion During Pregnancy in a High-Risk Population," *American Journal of Obstetrics and Gynecology*, 109:1-7, Jan. 1, 1971.

Presented in this paper is a study undertaken "to further assess the value of utilizing estrogen/creatinine ratios as a clinical adjunct in high-risk pregnancies." One thousand two hundred ninety-two urine specimens were obtained from 219 low-income, adolescent, pregnant patients, and estrogen/creatinine ratios were determined. The curve of the plotted values was found to be "almost identical" in slope and direction to those previously known for 24 hour collections. No extremely low values later than the 34th week of pregnancy were noted, and the outcome in all the pregnancies was "favorable"; thus, the prognostic value of the method was demonstrated. A high correlation was found between average estriol values and infant birth weight. A difference in values was noted for prematurely born infants and small for dates infants. Implications are considered.

721. Osofsky, Howard J.; Nesbitt, Robert E.L.; and Hagen, John H.: "High-Risk Obstetrics. IV. Estrogen/Creatinine Ratios in Routine Urine Samples as a Method of Screening a High-Rish Obstetric Population," *American Journal of Obstetrics and Gynecology*, 106:692-698, Mar. 1, 1970. (Series: For I see #31, II see #695, III see #32, V see #33, VI see #250.)

The difficulties with respect to "methodalogic and motivational factors," involved in the serial 24 hour urinary estrogen excretion measurement method, are mentioned. An alternate approach is presented in which estrogen/creatinine ratios, determined from single urine specimens, were utilized in high-risk pregnancies. This method was then compared for validity with the 24 hour estriol excretion method. Forty-two 24 hour urine specimens were obtained from 16 high-risk adolescent obstetric patients. Three hundred ninety-two single urine specimens were obtained from 84 similar patients. The characteristics of the patients are described. Only 25% of the 24 hour urine specimens were accurate. The results presented show that the curve resulting from the plotting of estrogen/creatinine ratios was "almost identical in slope and direction" to those previously determined for 24 hour urinary estrogen excretion. The utility of the estrogen/creatinine ratio method is discussed.

722. Ostwald, P.F.; Phibbs, R.; and Fox, S.: "Diagnostic Use of Infant Cry," *Biologia Neonatorum*, 13:68-82, 1968.

The literature on the subject is reviewed and a study by the authors is reported in which the relationship between the cry factors, duration and pitch, and the clinical status of infants was examined. Cry illicitation and diagnostic methods are described. On the basis of all neurological, developmental, maternal, etc., data available, 13 infants were divided into three groups: normal, questionably impaired, and abnormal. The cases are described in detail. Three hundred fifty-six cries were analyzed with the methods given. "Duration measurements showed no consistent differences between the three groups. Pitch measurements showed a marked increase of the fundamental tone only among infants rated as imparied or abnormal." Implications are considered.

723. Ounsted, Margaret: "Maternal Constraint of Foetal Growth in Man," *Developmental Medicine and Child Neurology*, 7:479-491, Oct., 1965.

Two hundred twenty-five unselected infants and their mothers ascertained before the 20th week of gestation were compared with 90 "growth-retarded" infants and their mothers with respect to numerous factors often associated with low birth weight. The two groups did not differ significantly at any point in length of gestation. When the weights of siblings in the two groups were compared, a highly significant difference was noted. The results of two subsidies are also reported. On the basis of results, "it is suggested that the mothers of infants whose birth weight is exceptionally low in relation to the duration of pregnancy regularly constrain the untrauterine growth of all their young." Ramifications are discussed.

724. Overall, James C., Jr.: "Neonatal Bacterial Meningitis; Analysis of Predisposing Factors and Outcome Compared with Matched Control Subjects," *Journal of Pediatrics*, 76:499-511, Apr., 1970.

Using data from the Collaborative Perinatal Research Study, 25 infants having had neonatal meningitis, as defined, and 46 matched controls were studied to "determine: (1) the factors predisposing to the development of meningitis," "(2) the conditions associated with the acute illness which correlated with poor outcome," and (3) the occurrence of sequelae in the survivors as determined from standardized follow-up information. Findings concerning etiological and predisposing factors, age of onset, clinical symptoms, lab results are presented and discussed. Also considered are neonatal immunity and management implications.

The fatality rate in the group with the illness was 60% with five of the ten survivors having sequelae. A lengthy bibliography is included.

725. Overall, James C., Jr., and Glasgow, Lovell A.: "Virus Infections of the Fetus and Newborn Infant," *Journal of Pediatrics*, 77:315-333, Aug., 1970.

Included in this discussion are the following related topics: (1) pathogenic factors in such viral infections, (2) the frequency of such viral infections, (3) the clinical manifestations of cytomegalic inclusion disease, rubella, coxsackie virus, other picornaviruses, herpes simplex, poxviruses, varicella-zoster infections, and mumps, (4) the laboratory diagnosis of viral infections in the neonate, and (5) the therapy for virus infections in the neonate. A lengthy bibliography follows the text.

726. Page, Dorothy: "Developmental Analysis in Evaluation and Treatment of Cerebral Palsy," *Journal of the American Physical Therapy Association*, 42:177-179, Mar., 1962.

A program that emphasizes the understanding of early development and integrated functioning in evaluating and treating the cerebral palsied child is described. "The base level of efficient and integrated function" should be determined for each child during the evaluation process. Numerous questions and observations to be made during this process are listed. The treatment program aims at increasing the child's level of function in natural developmental sequence. Parental participation in the program is discussed and positive results of the program which have been observed are presented.

727. Paine, Richmond: "Characteristics of Fits in the Newborn Period," in *Studies in Infancy*, based on a study group held at Oxford, September, 1966; edited by Ronald MacKeith and Martin Bax. London: Spastics International Medical Publications in association with Heinemann Medical Books, 1968. pp. 70-77. (Clinics in Developmental Medicine, No. 27.)

Discussed in this paper are the causes of neonatal fits, the treatment for such convulsions, and the prognosis for infants suffering convulsions. It is felt that the details of delivery

are usually the primary considerations in evaluating a newborn with convulsions. Anticonvulsant drugs should be given after the specific causal factor has been determined, or in the absence of an identifiable cause. The occurrence of neonatal fits is followed by an increased risk of residual brain damage in the form of cerebral palsy, mental retardation, or epilepsy. It is believed that approximately half of the infants suffering neonatal convulsions are later neurologically normal.

728. Paine, Richmond: "The Future of the 'Floppy Infant': A Follow-Up Study of 133 Patients," *Developmental Medicine and Child Neurology*, 5:115-124, April, 1963.

The term 'floppy infant' is traced historically, and conditions in which hypotonia is found are enumerated. A study is then described in which 133 children, ages 6 months to 2 1/2 years, were referred to the author mainly because of delayed motor development. Hypotonia was confirmed on examination. At this initial diagnosis, 68 were believed to have cerebral palsy, and 21 were thought to have "congenital hypotonia." One hundred and twelve of the children were given follow-up examinations at school age. The "initial and final diagnoses" are given in Table II. Most of those originally diagnosed as cerebral palsied were found to be athetoid or spastic at follow-up. The 19 congenital hypotonic patients seen at follow-up are further described, and divided into three groups. It is felt that the diagnosis of "congenital hypotonia" is "one of exclusion," and needs to be validated at a follow-up examination. A muscle biopsy is a much needed aid in giving a final diagnosis.

729. Paine, Richmond S.: "Cerebral Palsy: Symptoms and Signs of Diagnostic and Prognostic Significance." *Current Practice in Orthopaedic Surgery*, 3:39-58, 1966.

The cerebral palsies are defined and classified with each type also defined. Then described in detail are the "diagnostic signs in the neonatal period" and the "diagnostic signs in infancy." Photographs often illustrate these signs. Differential diagnosis is considered and signs which may aid the physician in determining the prognosis are presented. Four conclusions are listed.

730. Paine, Richmond S.: "Early Recognition of Neuromotor Disability in Infants of Low Birthweight," *Developmental Medicine and Child*

Neurology, 11:455-459, Aug., 1969.

Some of the early signs of neuromotor disability in low birthweight infants are described. These signs should be constantly reassessed in the process of diagnosis. The consensus from other studies is that early motor and reflex maturation is a function of age since conception rather than age since birth. Therefore, it is suggested that infants of low birthweight be judged according to the estimated conceptual age.

731. Paine, Richmond S.: "The Evaluation of Infantile Postural Reflexes in the Presence of Chronic Brain Syndromes," *Developmental Medicine and Child Neurology*, 6:345-361, Aug., 1964.

Described is a study in which 129 infants, referred for neurological consultation because of abnormal motor development, were given serial examinations at three month intervals until at least the age of three. The majority were diagnosed as having some type of cerebral palsy with the two most common types being "spastic tetraparesis" and "choreoathetosis." The authors concern in the majority of the article is to describe the evaluation of each of the major postural reflexes in these 129 cases. Considered are muscle tone, tendon and abdominal reflexes, the Moro reflex, "asymmetric tonic neck responses," "neck righting reflexes," the supporting reaction of the legs, the placing reaction, automatic stepping, hand function, the parachute reaction, the Landau reflex, and the response from vertical suspension in space. The cases of seven infants, who at early examination appeared to have cerebral palsy but by age three or later, had "normal motor function," are briefly reviewed.

732. Paine, Richmond S.: "Neurological Grand Rounds: Ataxia and Abnormal Gaits in Children," *Clinical Proceedings of the Children's Hospital of the District of Columbia*, 22:43-51, Feb., 1966.

Factors to be included in an examination of a child's gait and various types of abnormal gaits are described.

733. Paine, Richmond S.: "Neurologic Examination of Infants and Children," *Pediatric Clinics of North America*, 7:471-510, Aug., 1960.

The modifications made in the neurologic examination for infants and children are considered, and a simple form for recording the

data of the examination is presented. The process of the neurologic examination of infants is described by discussing the components of observation, assessment of sensoral function, administration of tests that require minimal handling, administration of tests that require greater handling, the developmental evaluation, and the synthesis of findings. Attention is then given to the neurologic examination of the older child.

734. Paine, Richmond S.: "On the Treatment of Cerebral Palsy; The Outcome of 177 Patients, 74 Totally Untreated," *Pediatrics*, 29:605-616, Apr., 1962.

One hundred and three cerebral palsied patients who had received "intensive physical therapy, with or without bracing and orthopedic surgery" were compared to 74 cerebral palsied patients who had received no treatment. All were over age 14 at the follow-up examination and were classified in groups as "spastic hemiparesis" (78), "spastic tetraparesis" (33), or "primarily extrapyramidal disordered and unwanted movement" (66). Data on the patients and comparison results are presented by group. "The data presented suggest that intensive physical therapy of the type available from 1930 to 1950 had its chief effect on patients with at least moderately severe spastic hemiparesis or tetraparesis, who appeared to develop better gaits if treated, and had fewer contractures."

735. Paine, Richmond S.: "Prenatal and Perinatal Factors Affecting the Central Nervous System," *Clinical Proceedings of Children's Hospital of the District of Columbia*, 24:277-293, Sept., 1968.

Numerous studies concerning cerebral palsy, mental retardation, and minimal brain dysfunction are reviewed as to the prenatal and perinatal abnormalities that have been found to be associated with these conditions. The disadvantages of retrospective studies and the advantages of prospective studies are rated.

736. Paine, Richmond S.; Brazelton, T. Berry; Donovan, Desmond E.; Drorbaugh, James E.; Hubbell, John P., Jr.; and, Sears, E. Manning: "Evaluation of Postural Reflexes in Normal Infants and in the Presence of Chronic Brain Syndromes," *Neurology*, 14:1036-1048, Nov., 1964.

"In connection with a study of the evaluation of postural reflexes in neurologically abnormal infants," 66 "normal" infants, as defined, participating in the Collaborative Study, were examined at regular 4-6 week intervals during the first year of their lives to determine the evaluation of neurological signs and the normal range of variation. Individually discussed are the results concerning muscle tone, reflexes, Moro reflex, tonic neck reflexes, neck-righting reflexes, placing reaction, stepping, supporting reaction, parachute reflex, Landau reflex, vertical suspension in space, hand grasp, and developmental milestones. Thirteen conclusions are listed in the "Summary" along with 10 conclusions from a "serial study of 200 abnormal infants over a three-year period."

737. Paine, Richmond S., and Fenichel, Gerald M.: "Neurology Grand Rounds: Infantile Hypotonia," *Clinical Proceedings of Children's Hospital of the District of Columbia*, 21:175-189, July-Aug., 1965.

Diseases of the upper and of the lower motor neurons which can produce infantile hypotonia are discussed. Dr. Paine described the results of a review he made of 119 patients, ages 6 months to 2 years, "who were referred because of slow development of hypotonia." Various diagnostic tools and tests and their uses are described.

738. Paine, Richmond S., and Oppe, Thomas E.: *Neurological Examination of Children.* Foreword by Lord Brain. London: Spastics Society Medical Education and Information Unit in association with Heinemann Medical Books, 1966. 279 pp. (Clinics in Developmental Medicine, Nos. 20/21.)

In this book the neurological examination as it pertains to children is fully described, and the significance of possible findings is discussed. After emphasizing the importance of the patient's complete history, considering pertinent symptoms, and briefly discussing the general physical examination, the authors present an outline for recording information from the neurological examination. The subsequent text generally follows this outline. The mental condition of the child and "Special Tests of Cerebral Function" are considered. Three chapters are then devoted to describing the methods used when examining the speech, head, neck, spine, and the individual cranial nerves of the child. In other chapters, methods of assessing posture and gait; reflex activity; and motor, sensory

and autonomic functions are described. In the final chapter some special techniques used in neurological assessment, such as electroencephalography, electromyography, biopsy, etc., are discussed.

739. Pan American Health Organization. Advisory Committee on Medical Research. *Perinatal Factors Affecting Human Development.* Proceedings of the Special Session held during the Eighth Meeting of the PAHO Advisory Committee on Medical Research, June 10, 1969. Washington, D.C.: The Organization, 1969. 253 pp. (Pan American Sanitary Bureau Scientific publication No. 185.)

The papers presented at this meeting are contained in this volume. They are concerned with various factors that may affect the development of the fetus during pregnancy and labor. Also considered are methods developed to evaluate fetal condition. "Discussions" are included.

740. Parmelee, A.H.: "Neurological Examination of the Newborn," in *Exceptional Infant, Volume 2; Studies in Abnormalities* edited by Jerome Hellmuth. New York: Brunner/Mazel, 1971. Pp 3-23.

Various approaches to the neurological appraisal of the newborn are reviewed. Three major purposes of the newborn neurological examination are listed, and several factors that should be considered when assessing the examination results are discussed. "Three types of situations in which a neurological evaluation is desired" are separately described. These are when "neonatal neurological problems are obvious," when neurological progress is being followed on a day-to-day basis, and when a long term "predictive neurological evaluation" is made. Numerous studies are mentioned and are cited in the bibliography.

741. Parmelee, A.H., Jr.; Minkowski, A.; Dargassies, Suzanne Saint-Anne; Dreyfus-Brisac, Colette; Lezine, Irene; Berges, J.; Chervin, Genevieve; and, Stern, Evelyn: "Neurological Evaluation of the Premature Infant; A Follow-up Study," *Biology of the Neonate,* 15:65-78, 1970.

Considered is the relationship found between the results of neonatal neurological examinations and neurological examinations

"generally done between 2 and 6 years of age" on 187 children, the majority of whom had been premature. The subjects and examination methods are described. Numerous tables detail the results of comparisons. The neonatal examination was found to have significant predictive value based on correlation with the childhood examination. Those children who had been premature or small for gestational age at birth were found to have a disproportionately high incidence of childhood neurological pathology, but such incidence had not been evident with these children at their neonatal exams. The reverse trend was revealed for those children whose birth weights had been "above the 90th percentile for their gestational age." "There was also a definite tendency for neurological pathology in the neonate to improve." Implications are discussed.

742. Parmelee, Arthur H., Jr.: "A Critical Evaluation of the Moro Reflex," *Pediatrics*, 33:773-788, May, 1964.

The Moro reflex is described, and conflicting beliefs concerning the elicitation and the response of the reflex are discussed. A historical review of studies on the reflex is then presented followed by a three-part described study in which an attempt was made "to determine in some systematic way an optimal stimulus and response rating scale." Each part of the study is individually presented, including findings and "comment." Various stimuli were tested for effectiveness, and scoring techniques to measure hand and arm movement during the response and state of arousal at the time of elicitation were devised. Both motion picture analysis and direct observation were used in the study. Methods and results of each part are presented in condensed form in the "Summary."

743. Parmelee, Arthur H., Jr.: "The Doctor and the Handicapped Child," *Children*, 9:189-193, Sept.-Oct., 1962.

The role of the doctor in the process of helping handicapped children and their parents is discussed. Factors involved with handicaps noted at birth are considered separately from those involved with handicapping conditions noted later.

744. Parmelee, Arthur H., Jr., and Schulte, Franz J.: "Developmental Testing of Pre-Term and Small-for-Date Infants," *Pediatrics*, 45:21-28, Jan., 1970.

In an earlier study (Schulte, Michaelis, Linke, Nolte, 1968) twenty-six pre-term infants were found to have "significantly slower nerve conduction velocities" as neonates than did 25 normal, full-term neonates and 22 small-for-date neonates. These same infants were given Gesell developmental tests around the age of 40 weeks in order "to determine to what degree performance later in infancy is dependent on neurological maturity at birth." The infants, the method used, the results, and the implications are presented. "Findings substantiate the concept that performance on the Gesell schedules is dependent on time from conception rather than time from birth. Pre-term infants should have their age determined from their expected date of birth for purposes of calculating a developmental quotient."

745. Patel, Daksha A.; Pildes, Rosita S.; and Behrman, Richard E.: "Failure of Phototherapy to Reduce Serum Bilirubin in Newborn Infants," *Journal of Pediatrics*, 77:1048-1051, Dec., 1970.

Data from eight cases are presented to suggest that neonatal jaundice is not always reduced when phototherapy is used.

746. Paterson, P.J.: "The Effects of Asphyxia on the Mid-Gestation Human Foetus," *Biology of the Neonate*, 17:285-291, 1971.

"The metabolic effects of asphyxia on the immature human foetus were studied over a 20-minute period." Twenty fetuses were studied with detailed methods and data reported. "Blood pH fell whilst PCO_2, base deficit and lactate increased. Plasma potassium did not show consistent changes. The mean hepatic tissue carbohydrate concentration and the blood glucose level fell during the study."

747. Paul, Richard H., and Hon, Edward H.: "A Clinical Fetal Monitor," *Obstetrics and Gynecology*, 35:161-169, Feb., 1970.

Described are the equipment and technics used and the results of one year's experience with "a portable, relatively inexpensive, simple-to-operate fetal monitor" from which continuous fetal heart rate and uterine contraction records can be obtained during labor. "In a monitored group of 245 high-risk patients, there was a decrease of about 75% in primary Cesarean-Section rate for clinically diagnosed fetal distress, and the incidence of depressed babies was lower than expected."

748. Paul, Richard H., and Hon, Edward H.: Endoscopic Examination of Fetal Scalp and Fetal Electrocardiography. Value of Lateral Position," *Obstetrics and Gynecology*, 35:111-113, Jan., 1970.

Described are improvements made in the endoscopic technique of fetal evaluation.

749. Paul, W.M.; Gare, D.J.; and Whetham, J.C.: "Assessment of Fetal Scalp Sampling in Labor," *American Journal of Obstetrics and Gynecology*, 99:745-753, Nov. 15, 1967.

In order to assess this technique, the described method was used 249 times during the labors of 146 patients, 56 of which "showed clinical signs of fetal distress." "Mean values for pH, CO_2, and base deficit did not differ in the 'distressed' and 'nondistressed' group. Severe fetal acidosis (ph 7.10) was encountered infrequently. Actual pH of the fetus in the range observed in these cases was not related to the immediate state of the newborn. The presence of a normal pH in the presence of suspected fetal distress may allow a more conservative approach to avoid surgical intervention in these situations. No precise measure of acid-base status is suggested as a firm indication for intervention in suspected fetal distress." "Discussion" follows the text.

750. Peck, James E.: "The Use of Bottle-Feeding during Infant Hearing Testing," *Journal of Speech and Hearing Disorders*, 35:364-368, Nov., 1970.

Such a procedure in which the mother feeds the infant in a test booth while sound signals are presented is described. Two cases are presented to illustrate the "values and limitations" of the technique and advantages are listed.

751. Peiper, Albrecht. *Cerebral Function in Infancy and Childhood.* Translation of the 3rd rev. German ed. by Benedict Nagler and Hilde Nagler. New York: Consultants Bureau, 1963. 683 pp. (The International Behavioral Science Series.)

Divided into 15 sections, this book comprehensively describes cerebral function in the newborn and young child. Two sections are concerned with sensory function, four deal with motor and reflexsive activity, and other sections provide information on the neurological aspects of respiration, food intake, sleep and

conditioned reflexes. In Chapters 12-14 "Neurological Characteristics of Certain Developmental Phases," evaluational aspects of cerebral function, and environmental influences are discussed respectively. Each section is followed by a summary and a bibliography. A list of the works by the author and his associates follow the text.

752. Pendleton, Thelma Brown, and Simonson, Judi: "Training Children with Cerebral Palsy," *American Journal of Nursing*, 64:126-129, May, 1964.

The authors describe methods used at the Piper's Portal Schools, United Cerebral Palsy of Chicago to train cerebral palsy children in self-help. Bladder training, bowel training, drinking from straws, chewing, feeding, and dressing are each considered.

753. "Peripheral Phenol Injections Reduce Spasticity," *Journal of the American Medical Association*, 193:12:31-32, Sept. 20, 1965.

The encouraging results of preliminary clinical trials of this method by three Stanford University Medical Center physicians with patients having spasticity from various causes are reported. Explanations regarding the reduction in spasticity when 3% phenol in solution is injected peripherally and problems are described. This "nerve injection technique appears to be a potential rehabilitative method which avoids permanent nerve function destruction."

754. Perlstein, M.A.: "Cerebral Palsy; Incidence, Etiology, Pathogenesis," *Archives of Pediatrics*, 79:289-298, Aug., 1962.

Cerebral palsy is defined, and the terms "incidence" and "prevalence" are differentiated with pertinent studies reviewed. The etiology of cerebral palsy is considered in detail with prenatal, natal, and postnatal factors described. Conclusions are listed.

755. Perlstein, M.A., and Hood, Philip N.: "Etiology of Postneonatally Acquired Cerebral Palsy," *Journal of the American Medical Association*, 188:850-854, June 8, 1964.

"Postneonatally acquired cerebral palsy" is defined as being that which occurs after the first two weeks of life. Four thousand five hundred and forty-six cerebral palsied patients of Dr. Perlstein were retrospectively studied. Approximately 14% of these had postneonatally acquired cerebral palsy. "Sixty-five per cent was acquired before the age of two years and 95% before eight years." The results of analyzing these cases with regard to type of cerebral palsy and etiology are reported. Separately discussed are five etiological categories: encephalopathy, skull trauma, meningitis, vascular causes, and other causes. Facts relating to sex ratio, race, and age of acquisition are also presented.

756. Perlstein, Meyer A., and Attala, Ramzy: "Neurologic Sequeale of Plumbism in Children," *Clinical Pediatrics*, 5:292-298, May, 1966.

Reported are the results of a survey taken during a 10-year period of the neurologic sequelae of lead poisoning in 425 children in the Chicago area. Sixty-one per cent of the patients recovered completely from the lead poisoning and 39% had some form of neurologic manifestation remaining. The sequelae are presented and discussed in four categories: 1) mental retardation, which occurred "in 22 percent of the total series"; 2) recurrent seizures which occurred in "20 per cent of the patients"; 3) cerebral palsy, which occurred in 2 per cent of the patients; and 4) optic atrophy, which occurred in 1 per cent of the patients. The mode of onset of the symptoms was "divided into six clinical types, three with neurologic symptoms, and three without." The incidence of the sequelae was then classified by the mode of onset. Three cases are reported.

757. Phelps, Winthrop M.: "The Cerebral Palsies," *Clinical Orthopaedics and Related Research*, 44:83-88, Jan.-Feb., 1966.

The historical development of treatment methods, terminology, etc., is briefly traced. Current pathogenic and treatment concepts, including discussions on surgery and bracing, are considered.

758. Phelps, Winthrop M.: "Complications of Orthopaedic Surgery in the Treatment of Cerebral Palsy," *Clinical Orthopaedics and Related Research*, 53:39-46, July-Aug., 1967.

The orthopaedic characteristics of the various types of cerebral palsy are described and related to treatment. The 'indications and contraindications for surgery' and complications occurring in the various joint procedures are considered. Also discussed are the complications and difficulties occurring in procedures to correct knee, ankle, and foot deformities and disabilities and surgery of the hand and arm in cerebral palsied patients. Because many deformities are known to reoccur with growth, it is felt that the best surgical results are usually obtained after the growth period of life. Bracing and exercises to control the deformities should be used until growth has ended.

759. "Phenobarbital Halts Rise in Bilirubin," *Journal of the American Medical Association*, 209:855, Aug. 11, 1969.

Presented briefly are the results of studies conducted at McGill University by Leo Stern, M.D. The administration of phenobarbital late in pregnancy was found to be of aid in preventing neonatal jaundice, and its administration in neonates was found to reduce elevated serum bilirubin levels. The doctor suggests its usage in cases of "'Coomb's positive' infants with disorders such as erythroblastosis and ABO incompatibility, badly bruised infants with excessive red cell breakdown, infants of diabetic mothers, and infants in perinatal distress."

760. Phibbs, R.H.; Harvin, D.; Jones, G.; Talbot, C.; Cohen, M.; Crowther, D.; and Tooley, W.H.: "Development of Children Who Had Received Intra-Uterine Transfusions," *Pediatrics*, 47: 689-697, Apr., 1971.

The growth and development of 24 children between the ages of 1 - 5 years, who had received intra-uterine transfusions, were studied. Neonatal management methods and follow-up examination methods are described. Results are presented in a table and in extensive appendices. Features reported include neonatal course, physical growth, general health, very brief neurological findings, developmental and intelligence test results, and audiologic, speech, and language test results. Twenty-one of the children were considered to be normal. One child had spastic paraplegia and died at 7 months of age, one child had a "hearing loss" and one had a "speech handicap." Results are discussed with respect to the high risk of CNS damage in this group of children. It is tentatively concluded "that, when IUT is used in appropriately selected fetuses and combined with aggressive therapy during the neonatal period, most survivors will be neurologically intact."

761. Philips, Champe: "Devices Useful for Children," *Journal of the American Physical Therapy Association*, 42:408-409, June, 1962.

Four "commercially made products" have been found useful in treating cerebral palsied infants and children. Their use is described and pictured. The devices are a leg rest, a sleeve ironing board, a waste paper basket, and a garbage can dolly.

762. Phillips, Louise. *Staff Training in a Rural Area.* Austin, Texas: University of Texas, Program for Staff Training of Exemplary Early Childhood Centers for Handicapped Children, [1971]. 15 pp. (Staff Training Prototype Series Vol. II, No. 2.)

This material is designed to be used in the accompaniment of transparencies. Described is the staff training program of a model preschool for handicapped children in Magnolia, Arkansas. The four areas of training considered are the training of para-professionals, the training of teachers, the training of supportive personnel, and general training of the total staff.

763. Pinkus, Geraldine S.; and Pinkus, Jack L.: "Fluorometric Determination of Total Estrogens in Amniotic Fluid of Normal and Complicated Pregnancies," *Obstetrics and Gynecology*, 36: 528-535, Oct., 1970.

Total estrogen concentrations were determined in 28 amniotic fluid samples from nine normal pregnancies and from twelve complicated pregnancies, including eleven cases of Rh isoimmunization. The procedure is described and involved "ammonium sulfate precipitation of the conjugated and free estrogens" and the fluorometric assay of solutions of total estrogens. The total estrogens were usually lower in the complications group with the lowest values found in cases of fetal death, but "normal and abnormal groups were not completely differentiated." It is suggested that the method may be useful in assessing fetal well-being.

764. Platt, B.S., and Stewart, R.J.C.: "Effects of Protein-Calorie Deficiency on Dogs. I. Reproduction, Growth, and Behaviour," *Developmental Medicine and Child Neurology*, 10:3-24, Feb., 1968.

Research on the effects of protein-calorie diet deficiency was conducted on dogs in an effort to aid in the understanding and treatment of this condition in man. Slow body growth and changes

in bones, brains, and behavior were seen in dogs fed from weaning on a low-protein diet. The bitches produced smaller and fewer pups than did the well nourished controls. When the pups of the malnourished mothers were fed low-protein diets, they were seen to have more abnormalities than did the malnourished pups of normal mothers. These abnormal characteristics are described as are the results of an effort to abate them with the introduction of high protein diets. Implications for man are discussed.

765. Pless, Ivan Barry, and Satterwhite, Betty: "Health Education Literature for Parents of Handicapped Children," *American Journal of Diseases of Children*, 122:206-211, Sept., 1971.

The importance of educating the parents of handicapped children, the role of the pediatrician in this education, and the problems that often occur are discussed. The benefit of written materials as a form of communication in such cases is stated. Presented on two full pages is a list of currently available "Health Education Literature for Parents of Handicapped Children." The materials are categorized according to disability with title, author, person for whom the item is intended, and the source of the item given. Addresses of sources follow the text of the article. In a separate table, again listed according to disability, are examples of biographical literature.

766. Plum, P.: "Aetiology of Athetosis with Special Reference to Neonatal Asphyxia, Idiopathic Icterus, and ABO-Incompatibility," *Archives of Disease in Childhood*, 40:376-384, Aug., 1965.

A study of 173 patients with congenital athetosis was conducted to determine the etiological relationships between the condition and the factors of "(1) neonatal asphyxia without icterus, (2) neonatal icterus of unknown origin, (3) neonatal icterus due to ABO- and Rh-sensitization, and (4) prematurity." Forty-nine per cent of the patients were first seen before age one. Neonatal history and examination are given to the children and their mothers as described, and terms are defined. Results and comparisons are presented in detail. Neonatal icterus or neonatal asphyxia, or both of these, had been present in all but five cases. The incidence of ABO and Rh- incompatibility was "significantly greater than in the general population." Thirty-five percent of the cases were born prematurely. Numerous differences among the etiological groups with regard to clinical features and neurological signs were noted.

767. Polacek, K.; Zwinger, A.; and Vedra, B.: "Spectrophotometric Examination of the Amniotic Fluid in Rh-Iso-Immunization: A Simple Method for the Evaluation of Results," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 78: 248-250, Mar., 1971.

Presented and described is "a simple diagram for evaluating the reliability of spectrophotometric examination of the amniotic fluid." "In a series of 40 iso-immunized women the condition at birth of all infants requiring active treatment during pregnancy was correctly predicted, but there were three false positive results." A definition is given for infants who were considered to require "active treatment."

268. Poland, Ronald L., and Odell, Gerald B.: "Physiologic Jaundice: The Enterchepatic Circulation of Bilirubin," *New England Journal of Medicine*, 284:1-6, Jan. 7, 1971.

Nine full-term cesarean section delivered neonates were fed formula containing agar as described, while 10 control newborns were fed the same formula without agar added. "Agar stabilizes bilirubin in aqueous solution and prevents its bacterial conversion." The infants and the detailed methods used are described as are the results. "No rise in the serum bilirubin concentration occurred after the 13th hour of life in the agar-fed infants. More bilirubin was excreted in the feces within the first five days in infants fed formula with agar, and these infants also lost less weight than the controls. By the sixth day, total fecal bilirubin excretion from birth was similar in both groups." Implications are discussed, including the role of agar-feeding in the reduction of hyperbilirubinemia.

769. Pollock, G.A.: "Surgical Treatment of Cerebral Palsy," *Journal of Bone and Joint Surgery*, 44-B:68-81, Feb., 1962.

Factors that tend "to increase the chances of surgical success" in cerebral palsy are listed. Patient selection is discussed. Deformities of the upper and lower extremities and of the hip, that occur in cerebral palsy, are separately considered along with appropriate surgical procedures and expected results.

770. Porto, Sergio O.; Pildes, Rosita S.; and Goodman, Harold: "Studies on the Effect of Phototherapy on Neonatal Hyperbilirubinemia Among Low-Birth-Weight Infants. I. Skin Color,"

Journal of Pediatrics, 75:1045-1047, Dec., 1969. (Series: For II see #771.)

Twenty-three Caucasian and 29 Negro neonates, having birth weights of less than 2,500 grams, were randomly assigned to either an experimental or a control group. The experimental group was exposed to blue florescent light within 28 hours of birth. Phototherapy produced similar results in both the Caucasian and Negro infants, indicating "that skin pigmentation does not interfere with the photo-oxidation of bilirubin in the newborn infant."

771. Porto, Sergio O.; Pildes, Rosita S.; and Goodman, Harold: "Studies on the Effect of Phototherapy of Neonatal Hyperbilirubinemia Among Low-Birth-Weight Infants. II. Protein Binding Capacity," *Journal of Pediatrics*, 75:1048-1050, Dec., 1969. (Series: For I see #770.)

The results of a described, controlled study provide further evidence that the "products of phototherapy are probably nontoxic and harmless."

772. Pratt, L.E.A.: "Examination of the Child Handicapped By Cerebral Palsy," *Physiotherapy*, 49:116-121, Apr. 10, 1963.

The author divides such an examination by a physiotherapist into two parts: "The passive examination during which the child is not required to take any part, and the active examination when he is given the opportunity to show what he can do." Five areas to be examined are included in the "passive" portion of the examination and three in the "active." These eight areas are individually described. The differences between examining and planning for the infant and the older child are noted, and three cases are reviewed "in order to illustrate the range of difficulties which may occur."

773. Prechtl, H.F.R.: "Neurological Sequelae of Prenatal and Perinatal Complications," *British Medical Journal*, 4:763-767, Dec. 30, 1967.

Relationships between obstetric complications and neurological examination results were considered. One thousand three hundred seventy-eight full-term newborns were neurologically examined, using the author's standardized technique, and data on maternal

factors, pregnancy, delivery, etc. were analyzed. Forty-two obstetric variables for each case were considered, and a count was made of all variables in each case that deviated from "optimal conditions." There was a tendency for non-optimal conditions to occur together. The cases were divided into low, middle, and high risk groups "on the basis of obstetric complications" and again into three groups on the basis of neurological examination scores. It was concluded "that there is a high association between obstetric complications as measured by the obstetric scores - and the occurrence of neonatal neurological abnormalities." Implications are considered.

774. Prechtl, Heinz F.R.: "Hazards of Oversimplification," *Developmental Medicine and Child Neurology*, 12:522-524, Aug., 1970.

The neurological examination of infants and children is different from that of adults because developmental aspects must always be considered. Six principles are listed which must be adhered to in the examination "if the optimal strategy is to be developed." Adherence to these principles necessitates an elaborate procedure such as the author has developed. Reliability and validity must be questioned when shortened forms of examination are used.

775. Prechtl, Heinz F.R.: "Polygraphic Studies of the Full-Term Newborn. II. Computer Analysis of Recorded Data," in *Studies in Infancy*, based on a study group held at Oxford, September, 1966; edited by Ronald MacKeith and Martin Bax. London: Spastics International Medical Publications in association with Heinemann Medical Books, 1968. pp. 22-40. (Clinics in Developmental Medicine, No. 27.) (Series: For I see #776.)

The methods used and results obtained when automatic data processing techniques were employed to describe polygraphic data from the full-term newborn are presented. Results regarding respiration, heart rate, eye movements, the electroencephalogram, and the analysis of state cycles are included. "In our experience computer analysis of long polygraphic records in newborn infants may supply new and significant information on nervous regulation, in addition to clinical neurological examinations. This technique can also be used as a powerful tool in the analysis of response patterns of normal and abnormal infants to sensory stimulation."

776. Prechtl, Heinz F.R.; Akiyama, Yoshio; Zinkin, Pamela; and Grant, Donald Kerr: "Polygraphic Studies of the Full-Term Newborn. I. Technical Aspects and Qualitative Analysis," in *Studies in Infancy*, based on a study group held at Oxford, September, 1966; edited by Ronald MacKeith and Martin Bax. London: Spastics International Medical Publications in association with Heinemann Medical Books, 1968. pp. 1-21. (Clinics in Developmental Medicine, No. 27.) (Series: For II see #775.)

"The concept of state in the analysis of nervous function and behavior in young infants" is discussed. Presented are the methods used and the preliminary results obtained in the polygraphic recording of the respiration, EKG, EEG, EMG and eye movements of the full-term newborn infant. Numerous polygraphic recordings of the various features studied are reproduced, and the value of polygraphy is mentioned.

777. Prechtl, H.F.R.; Theorell, K.; Gramsbergen, A.; and Lind, J.: "A Statistical Analysis of Cry Patterns in Normal and Abnormal Newborn Infants," *Developmental Medicine and Child Neurology*, 11:142-152, April, 1969.

Crying patterns were statistically studied in 21 newborn infants from birth to age 9 days. After daily neurological examinations, the infants were divided into three groups: 1) normal; 2) transiently abnormal; and, 3) consistently abnormal. Results show that the normal babies displayed a cry pattern characteristic of the individual, and the cry duration tended to become shorter and less variable during the 9 days. But the infants in groups 2 and 3 showed a large variation in crying patterns, especially in the cry duration. It is suggested that such data may correlate with other developmental and neurological findings.

778. Prechtl, H.F.; Weinmann, H.; and, Akiyama, Y.: "Organization of Physiological Parameters in Normal and Neurologically Abnormal Infants." *Neuropadiatrie*, 1:101-129, July, 1969.

The concept of "state" in infants is explained and a "state" rating scale is presented. The process and results of using polygraphic techniques to record a number of physiological parameters in infants is described. The following variables were recorded with methods described: "respiration, EKG, heart rate (cardiotachogram), electrooculogram (EOG), EEG,

EMG." The interrelationships found among these parameters are presented and "a series of mathematical models are suggested to help in the analysis of the statistical properties of the separate parameters as well as of their interrelationships." "A number of preliminary results obtained by these methods illustrate examples of normal and abnormal patterns." "The practical implications of polygraphic recordings and their data processing" for normal and abnormal infants are considered.

779. "Prenatal Antibody Screening and Use of Rho (D) Immune Globulin (Human)," *ACOG Technical Bulletin*, No. 13, June, 1970.

The purposes, methods, and timing of prenatal antibody screening are briefly mentioned. The criteria needed to be met by both mother and baby before Rho (D) immune globulin (human) is administered to the postpartum patient are listed, and the procedure of administration is described. Also listed are the "contraindications" and "cautions" to be used in administration. A copy of "the suggested authorization and procedure form" follows.

780. "Prevention of Rh-Haemolytic Disease: Results of the Clinical Trial; A Combined Study from Centres in England and Baltimore," *British Medical Journal*, 2:907-914, Oct. 15, 1966.

This work was done by Dr. C.A. Clarke and his colleagues at five medical centers. One hundred fifty-six Rh-negative primapara, who were found to be at risk of Rh immunization because of the number of fetal cells that had been "detected in their blood after delivery of an Rh-positive baby," were included. The women were evenly divided into experimental and control groups. The former were given "an intramuscular injection of 5 ml. of gamma-globulin containing a very high titre of incomplete anti-D" shortly after delivery. Six months later the sera of both groups were tested for antibodies. "No certain case of Rh immunization" was seen in the experimental group, but there were 19 such cases in the controls. In 18 treated women (six from this study), who had been delivered of Rh-positive ABO compatible babies in their second pregnancy, no antibodies were detected. The protective mechanism of anti-D is discussed, and further work by the group in this area is outlined.

781. Price, H.V.: "Hypoglycaemia Complicating Haemolytic Disease of the Newborn," *Archives of Disease in Childhood*, 44:248-251, Apr., 1969.

Six cases of newborn infants with hypoglycemia and hemolytic disease are reported. "It is suggested that cases of erythroblastosis fetalis are at risk in respect to hypoglycaemia. To detect the infants requiring treatment, Dextrostix testing every 4 of 6 hours for the first day of life seems indicated."

782. Price, Lloyd, L.: "Evoked Response Audiometry: Some Consideration," *Journal of Speech and Hearing Disorders*, 34:137-141, May, 1968.

Studies concerning this method of determining auditory thresholds are reviewed, and the method is critically evaluated. Problems with its usage and its validity are pointed out and discussed, including its use with the "very young and/or multiply involved" child. Problems of this technique which need to be solved to improve its clinical usefulness are listed.

783. Price, Lloyd L., and Goldstein, Robert: "Average Evoked Responses for Measuring Auditory Sensitivity in Children," *Journal of Speech and Hearing Disorders*, 31:248-256, Aug., 1966.

The methods and instruments used to obtain hearing thesholds in 70 children ages 2 months through 13 years are described. "On the basis of audiologic, speech, psychologic, social work, and medical evaluation, the children were divided into four groups: (a) normal, (b) auditory sensitivity impairment only, (c) impairment of auditory sensitivity plus other disorders, and (d) disorders other than impairment of auditory sensitivity. In groups (a) and (b) there was, in general, good agreement between the results of behavioral audiometry and results of EEA with the averaged evoked response. In groups (c) and (d) however, approximately half of the children showed lower thresholds for the averaged evoked response than behavioral tests indicated." The method was felt to be very valuable in group (d) in making appropriate recommendations for education and therapy.

784. Proctor, I.K., and Dempster, Francoise: "A Evaluation of a Method of Reinforced Response Audiometry for Pre-School Children," *International Audiometry*, 9:293-303, Aug., 1970.

Reported here are the results of a study in which "automatic food reinforcement audiometry" was used to test the hearing of 88 normal children of preschool age, 99 clinical cases under

age five, and 30 clinical cases over age five. The equipment used, its mode of operation, and the testing procedures are explained. "The system of rewarding successful responses proved to give satisfactory motivation in most cases and permitted the evaluation of a series of difficult clinical cases that had been resistant to testing by conventional audiometry."

785. Provence, Sally. *Guide for the Care of Infants in Groups.* New York: Child Welfare League of America, 1967. 104 pp.

The author's purpose in this book is to provide a guide for those working in the area of group infant care in order that children under the age of two who are living in a group care situation may be well cared for. The first six chapters deal with various features of infantile development - emotional, motor, self-identity, play, speech, etc. In subsequent chapters specific child care practices are discussed. Included are chapters of feeding, sleep, bathing and dressing, and toilet training. Program planning is also the topic of one chapter.

786. Provence, Sally, and Lipton, Rose C. *Infants in Institutions; A Comparison of Their Development with Family-Reared Infants during the First Year of Life.* Preface by Milton J.E. Senn. New York: International Universities Press, 1962. 191 pp.

Described in four parts is a research study in which the first year's development of institutionalized infants was compared with this development in family-reared infants. In Part I the methodology, including the tests used, is described. Part II contains a detailed portrayal of several features in the daily experience of the institutionalized infants - feeding, bathing, motor activities, etc. In Part III the two groups are compared with respect to numerous developmental and behavioral characteristics. Two infants from each group are compared in detail. Part IV includes a follow-up report on 14 of the institutionalized infants who were later placed in foster homes and a chapter on implications and applications of the results. The appendices contain further information on the testing materials and testing results, and a bibliography follows.

787. Queenan, John T.: "Amniocentesis and Transamniotic Fetal Transfusion for Rh Disease," for the Symposium on Amniotic Fluid, edited by Fritz Fuchs. *Clinical Obstetrics and Gynecology,* 9:491-507, June, 1966.

The dangers of an Rh-immunized pregnancy with respect to perinatal mortality, prematurity, hyaline membrane disease, etc., are described. The techniques and the values of amniocentesis and of intrauterine transfusions in preventing the above conditions are presented.

788. Queenan, John R., and Adams, Daniel W.: "Amniocentesis for Prenatal Diagnosis of Erythroblastosis Fetalis," *Obstetrics and Gynecology*, 25:302-307, Mar., 1965.

The procedure of amniocentesis and its employment on 44 immunized obstetric patients are described.

789. Queenan, John T., and Goetschel, Emmanuel: "Amniotic Fluid Analysis for Erythroblastosis Fetalis," *Obstetrics and Gynecology*, 32:120-133, July, 1968.

Three methods of amniotic fluid analysis were evaluated by analyzing 360 amniotic fluid samples from 140 Rh-negative sensitized pregnant women. The methods were "(1) deviation in optical density at 450 mm ; (2) corrected - bilirubin method; and (3) bilirubin-protein ratio." The first "two methods appeared superior to the third in assessing the condition of the fetus." The advantages of each method are discussed.

790. Rabe, Edward F.: "The Hypotonic Infant; A Review," *Journal of Pediatrics*, 64:422-440, Mar., 1964.

Reviewed are "the present clinical, physiologic, and pathologic concepts concerning the hypotonic infant from birth to 24 months of age." Hypotonia is defined, and factors involved in normal muscle tone are explained as background information. An etiological classification of hypotonia is then presented with the various diseases under each item in the scheme discussed. Hypotonia is seen as being due to the following causes: diseases of the central nervous system, diseases of the spinal cord, diseases of the spinal roots or peripheral nerves, abnormalities of the myoneural junction, and diseases of the muscle. Muscle biopsy, electromyography, determination of the nerve conduction time, serum enzyme determinations, measurements of urinary creatine and creatinine, and developmental assessment are individually discussed as diagnostic aids in etiology.

791. Rabor, Iole F.; Oh, William; Wu, Paul Y.K.; Metcoff, Jack; Vaughn, Mary A.; and Gabler, Marjorie: "The Effects of Early and Late Feeding of Intra-Uterine Fetally Malnourished (IUM) Infants," *Pediatrics*, 42:261-269, Aug., 1968.

Twenty-eight neonates who met the listed criteria of being IUM infants were studied. Thirteen of these infants weighed over 2,040 gm. at birth, and 15 weighed less than 2,040 gm at birth. The 28 infants were placed in either an early-fed group (4 hrs. after birth) or a late-fed group (24 hrs. after birth) depending "upon the age when the infants was incorporated into the study group." "None of the infants whose birth weight exceeded 2,040 gm. developed clinical complications." "In infants weighing less than 2,040 gm, three of nine late-fed group IUM infants developed symptomatic hypoglycemia," but none of the six early fed infants in this low birth weight group did. Other findings are reported to support the early feedingpmethod in IUM infants who weighed less than 2,040 gm. at birth. Such early feeding "may enhance glucose homeostasis in early neonatal life and prevent neonatal symptomatic hypoglycemia."

792. Rafael, Berta. *Staff Training Model in an Agency Setting.* Austin, Texas: University of Texas, Program for Staff Training of Exemplary Early Childhood Centers for Handicapped Children, [1971]. 19 pp. (Staff Training Prototype Series Vol. II, No. 6.)

After an "Introduction," the training program of the early education demonstration center of United Cerebral Palsy of New York City is explained. This explanatory material was designed to be accompanied by slides. The three parts of the training program are separately described. These are "(1) teacher training," in which the staff specialists act as an interdisciplinary team "to provide in-service training for the teachers," "(2) parent training which involves reciprocal sharing of information between parents and the staff, and (3) student training." Graphic models of these three parts of the training program are included.

793. Raiha, C.E.: "Prevention of Prematurity," in *Advances in Pediatrics*, Vol. XV. Edited by S.Z. Levine. Chicago: Year Book Medical Publishers, 1968. pp. 137-190.

The first portion of this paper is essentially a review of the literature concerning such topics as the survival of premature infants, the etiological factors in prematurity, the circulatory

function during the pregnancy, and the prevention of prematurity. The author then describes in detail a series of studies conducted in Finland by himself and others in which a relationship was found between low maternal heart volume and premature birth. On the basis of results preventative measures were initiated in prenatal clinics in Helsinki. Premature births were significantly reduced when measurement was taken of the heart volume of pregnant women, and those with a small volume were advised to rest. Such measurement in all pregnant women and facilitation of rest in high-risk cases is recommended.

794. Raivio, Kari O.: "Neonatal Hypoglycemia. II. A Clinical Study of 44 Idiopathic Cases with Special Reference to Corticosteroid Treatment," *Acta Paediatrica Scandinavica*, 57: 540-546, Nov., 1968. (Series: For I see #795.)

Obstetrical and neonatal information, features of the hypoglycemia, associated disorders found, treatment, and preliminary prognosis are presented for these 44 cases. Administration of hydrocortisone was shown to significantly shorten the duration of hypoglycemia. Four infants were diagnosed before six months of age as having "mental retardation with spasticity and infantile spasms." One of these died. All others appeared to be normal after four to twenty-six months of being observed. Suggestions for treatment are made.

795. Raivio, Kari O., and Hallman, Niilo: "Neonatal Hypoglycemia. I. Occurrence of Hypoglycemia in Patients with Various Neonatal Disorders," *Acta Paediatrica Scandinavica*, 57:517-521, Nov., 1968. (Series: For II see #794.)

In 1965 a program was begun at the Children's Hospital of the University of Helsinki to investigate "problems associated with neonatal hypoglycemia." Results of the first part of this study dealing with the determination of conditions predisposing to or associated with hypoglycemia are presented in this article. Nine hundred sixty-four newborns were screened for hypoglycemia. Methods of screening, treatment, and results are described. Three groups of infants were discerned to be predisposed to hypoglycemia: "dysmature" infants, infants of diabetic mothers, and critically ill infants. Methods employed by the authors for early detection are presented in the "Discussion" section.

796. Rambar, Alwin C.: "Effect of Maternal Virus Infections on the Fetus. Part I," *Illinois Medical Journal*, 136:261-267, Sept., 1969. (Series: For II see #797.)

This review of current knowledge deals primarily with the response of the fetus to viral infection originating in the mother. The various possible means by which the fetus can be infected and the general susceptibility of the immature to viral infections are discussed. Animal studies in the area are briefly reviewed. Specific viral infections and their relationships to fetal abnormalities are then considered. The individual viruses of concern in Part I include rubella, varicella-zoster infections, herpes simplex, smallpox, and vaccinia virus infection.

797. Rambar, Alwin C.: "Effect of Maternal Virus Infections on the Fetus, Part II," *Illinois Medical Journal*, 136:599-605, Nov., 1969. (Series: For I see #796.)

In continuation of Part I, the individual viruses and their relationships to fetal abnormalities that are considered in Part II include mumps, measles, influenza, poliomyelitis, coxsackie viruses, echo virus, hepatitis virus, western equine encephalitis, infectious mononucleosis, and cytomegalovirus. In discussing preventive measures, Dr. Rambar stresses that the use of live virus vaccines should be avoided during pregnancy, and pregnancy should be avoided for at least two months after inoculation with rubella vaccine. In the only other proven viral teratogen, the cytomegaloviruses, there is presently no treatment of value for use in preventing the possible serious effects on the fetus resulting from maternal infection.

798. Ramboer, Carlos; Thompson, R.P.H.; and, Williams, Roger: "Controlled Trials of Phenobarbitone Therapy in Neonatal Jaundice," *Lancet*, 1:966-968, May 10, 1969.

Three series of controlled trials were conducted "to determine the effect of phenobarbitone on neonatal hyperbilirubinaemia." In the first series when pregnant women were treated, as described, from the 32nd week of pregnancy until the initiation of labor, the administration of phenobarbitone was "effective." In the second and third series when infants of normal birth weight and infants of low birth weight were given phenobarbitone, as described, treatment "was less effective." Results are presented and discussed.

799. Rapin, Isabelle, and Graziani, Leonard J.: "Auditory-Evoken Responses in Normal, Brain-Damaged, and Deaf Infants,"

Neurology, 17:881-894, Sept., 1967.

Eighteen control infants and 43 infants considered to be brain-damaged and/or deaf were tested during sleep regarding auditory-evoked responses. Visual-evoked responses were also recorded in some cases. The age range was from one day to three years. Procedures are described in detail, and results are reported for the 18 controls, the 21 brain-damaged infants, the five deaf infants, and the 17 infants with congenital rubella. "By this method, residual hearing was detected and measured in eight infants with brain damage and in 11 infants with rubella, all of whom gave inconsistent or no behavioral response to sound and all of whom were afflicted with additional handicaps such as psychomotor retardation and visual loss."

800. Rawlings, Grace; Reynolds, E.O.R.; Stewart, Ann; and, Strang, L.B.: "Changing Prognosis for Infants of Very Low Birth Weight," *Lancet*, 1:516-519, Mar 13, 1971.

Sixty-eight of 72 surviving low birth weight infants (1500 gm. or less birth weight) who were born between 1966 and 1969 and were "cared for in University College Hospital (London) since we introduced methods of intensive care designed to prevent brain damage" were thoroughly followed as described. Neonatal management techniques are explained. Results are presented for groups of the children concerning developmental quotients, intelligence quotients, physical handicaps, and assessment of parents. "At a mean conceptual age of 2 years 3 months...59 (86.7%) appear to be normal children, five (7.4%) are abnormal, and four (5.9%) are classified as 'doubtful.' These results suggest that the prognosis for infants of very low birth weight has improved following the introduction of modern methods of care." Implications are considered.

801. Rembolt, R.R.: "Emotional Factors in Residential Care of Handicapped Children," *Clinical Orthopaedics and Related Research*, 47:65-71, July-Aug., 1966.

Comment is made on the lack of literature on "residential type long-term management" of the cerebral palsied child. The differences between this type of residential setting and the usual hospital situation are considered. Factors that have been found to affect the psychological reaction of children to hospitalization are presented, and other factors are listed that are in need of research to determine their influence on the psychological status of the hospitalized child. The

University Hospital School in Iowa City, Iowa is described as a residential center in which physically handicapped children live. The children admitted are described with respect to intelligence, age, medical diagnosis, duration of residence, and family visitation frequency. Case summaries are presented in the six cases which had displayed serious psychological disturbance. The factors applied in this residential center which contribute to the prevention of psychological problems are listed.

802. Rembolt, R.R.: "Programming for Infants with Cerebral Dysfunction: An Overview," in *Interdisciplinary Programming for Infants with Known or Suspected Cerebral Dysfunction.* The report of an interdisciplinary conference held at Santa Monica, California, March 16-18, 1970. Edited by Gene Hensley and Virginia Patterson. Boulder, Colorado: Western Interstate Commission for Higher Education, 1970.

The term "program" is defined and two major assumptions which must be a part of every program plan are presented. The interdisciplinary approach is emphasized. The Pine School Project at the University of Iowa is described as an example of a comprehensive program to attempt to improve the intellectual functioning of culturally deprived preschool children. Methods used and results obtained from a survey conducted by the author to determine the degree of participation of members of the American Academy for Cerebral Palsy in "Early Care" services during 1969 are reported in graphs and tables. A discussion is conducted on recent advances made in the area of infant cerebral dysfunction.

803. Rendle-Short, John: "The Care of the Child with a Long-Term Handicap." *Medical Journal of Australia*, 56:604-606, Sept. 20, 1969.

Handicapped children are discussed in relation to diagnosis, prevention, and management with emphasis on the latter. Four types of management are explained: "curative treatment," "symptomatic treatment," "palliative treatment," and "supportive treatment." It is in this last area that the doctor of a long-term handicapped child "can probably do the most good." This view is explained. Also considered are the attitudes of others - parents, community, and doctor - toward the handicapped child.

804. Reye, Corrie: "A Neuro-Developmental Approach to the Treatment of Cerebral Palsy; A Preliminary Report," *Australian Paediatric Journal*, 4:73-77, Mar., 1968.

The principles and procedures of a neurodevelopmental approach used over an 18-month period at The Spastic Centre of New South Wales to treat young cerebral palsied children are presented. Seven children, 12 months of age or less, and 50 children, ages 1 to 5 years, were so treated with results and the 7 case histories of the younger children briefly described. The value of such treatment with the very young cerebral palsied child is emphasized.

805. Reynell, J.K.: "The Significance of Developmental Information for the Assessment and Management of Handicapped Children," *Physiotherapy*, 57:163-168, April, 1971.

Suggestions for aiding "early learning processes in children with different types of handicap" are presented. The mother's role during physiotherapy is discussed, and a case is reported to "illustrate some of the points made on the use of developmental information as a guide to planning treatment." Also briefly considered is how developmental information can help the physiotherapist.

806. Reynolds, John W.: "Assessment of Fetal Health by Analysis of Maternal Steroids," *Journal of Pediatrics*, 76:464-469, Mar., 1970.

The process whereby the biosynthesis of estriol takes place during pregnancy is illustrated and described, and the various indications of fetal health given by the level of maternal excretion of estriol are discussed.

807. Richards, F.M.; Richards, I.D.G.; and Roberts, C.J.: "The Influence of Low Apgar Rating on Infant Mortality and Development," in *Studies in Infancy*, based on a study group held at Oxford, September, 1966; edited by Ronald MacKeith and Martin Bax. London: Spastics International Medical Publications in association with Heinemann Medical Books, 1968. pp. 84-88. (Clinics in Developmental Medicine No. 27.)

Described is a pilot study of the relationship between the low Apgar score at one minute after birth and the developmental level at one year. The study was conducted by the Department of Obstetrics and Gynaecology, Welsh National School of Medicine. The main finding was that although low Apgar score was associated with a very high neonatal mortality, the survivors appeared to have attained a normal developmental level at one year of age. Possible explanations for the findings are given.

808. Richards, I.D.G., and Roberts, C.J.: "The 'At Risk' Infant," *Lancet*, 2:711-713, Sept. 30, 1967.

Examined are "the principles on which the at-risk concept is based," the "detection of handicapping disorders," and "the validity of the evidence connecting at-risk categories with handicapping disorders." It is concluded that "the 'at-risk' concept is an unsound basis for the detection of handicapping disorders; there is no alternative to the clinical examination of all infants in the neonatal period, their screening for metabolic and auditory defects at the proper ages, and the careful observation of every infant's developmental progress by doctors, supported by health visitors."

809. Richards, Margaret: "The Role of a Social Worker in Counselling and Support," *Developmental Medicine and Child Neurology*, 11: 786-791, Dec., 1969.

Because of the large number of people helping the handicapped child and his family, there is much overlapping of responsibility. The problems resulting from this overlap and problems encountered in the parent-social worker relationship are discussed. Several responsibilities of the social worker in working with handicapped children are listed and explained.

810. Richardson, Frederick: "Assessment Centres for Handicapped Children," *Proceedings of the Royal Society of Medicine*, 59: 139-142, Feb., 1966.

The growth of such services in the United States is mentioned with the Handicapped Children's Center of John Hopkins University described. The Center's examination process and staffing arrangements are considered. Five points needed to be given consideration for the future planning of such centers in Great Britain are listed.

811. Rife, Sandra S., and Kennedy, Edgar: "A Feeding Device," *Artificial Limbs*, 13:64-68, Autumn, 1969.

This device which enables handicapped individuals to feed themselves, its components, and its use are illustrated. The physical requirements necessary for its use, the device itself, the method of its operation, its care, and the successful results of its use with cerebral palsied children are described.

812. Robbins, Peter G.; Gorbach, Arthur G., Jr.; and Reid, Duncan E.: "Neurologic Abnormalities at One Year in Infants Delivered After Late-Pregnancy Hemorrhage," *Obstetrics and Gynecology*, 29:358-361, Mar., 1967.

One hundred and three infants from the Collaborative Study "whose mothers had had significant third-trimester bleeding" were studied. Nineteen of these were stillborn or died neonatally. "Of the 84 infants followed for one year, 52 were considered normal at the one-year neurologic examination. Another 24 were classified neurologically suspicious, and eight definitely were neurologically damaged." In a group of 84 control infants, 80 were considered normal and four neurologically suspicious on the basis of the one-year neurologic exam. Relationships or lack of such revealed between outcome and the factors of maternal age, parity, cause of hemorrhage, type of delivery, degree of hemorrhage, and prematurity are presented.

813. Roberts, C.J.: "Developmental and Neurological Sequelae of the Common Complications of Pregnancy and Birth," *British Journal of Preventive and Social Medicine*, 24:33-38, Feb., 1970.

Difficulties that hamper studies in this area are discussed and previous work is reviewed. Three hundred and thirty-six infants were neurologically examined between the ages of 3 to 8 weeks and developmentally and neurologically examined between the ages of 44 to 56 weeks as described. Results from these examinations were related to the pregnancy and birth histories of the mothers of these infants, and results are reported and discussed. "The findings suggest that: The relationships between neurological status and certain complications of birth may not be direct, as has hitherto been thought, but are possibly indirect through the association between neurological status and certain complications of pregnancy." "When statistically significant associations between individual obstetric complications and subsequent neurological status can be demonstrated, the difference in incidence of handicaps among children

experiencing these complications and among the general infant population is not great enough to provide an acceptably sensitive screening procedure."

814. Roberts, C.J.: "Developmental Supervision and Future Trends in Infant and Child Welfare Work," *Developmental Medicine and Child Neurology*, 6:527-529, Oct., 1964.

The value of the developmental approach as it relates to the normal, to the handicapped, and to the mentally defective child is briefly considered. Also explained in brief is a Developmental Assessment Clinic opened in 1963 to provide routine developmental examinations for all infants in a defined area.

815. Roberts, C.J.: "The Distribution of Neurological Signs in Early Infancy: A Population Study," in *Studies in Infancy*, based on a study group held at Oxford, September, 1966; edited by Ronald MacKeith and Martin Bax. London: Spastics International Medical Publications in association with Heinemann Medical Books, 1968. pp. 50-64. (Clinics in Developmental Medicine, No. 27.)

This paper is a report on the distribution of neurological signs found in a population of normal infants, examined between the third and eighth week of life. A standardized examination procedure, consisting of six equally-weighted groups of neurological signs, was used. The results pointed to hypotonia and hypomobility as the most common abnormal symptoms found. Examination of these results and those of other studies suggest that the quality of muscle function appears to play an important role in determining not only the infantile neurological status, but also the future status of neurological function.

816. Roberts, Paquita. *Staff Training in an Inner City Setting*. Austin, Texas: University of Texas, Program for Staff Training of Exemplary Early Childhood Centers for Handicapped Children, [1971]. 13 pp. (Staff Training Prototype Series Vol. II, No. 7.)

The staff and parent training programs in the preschool department of the Mount Carmel Guild Hearing and Speech Diagnostic Center in Newark, New Jersey are described. Emphasized as part of the staff training is the gaining of knowledge about

the inner-city community and the problems the child and his parents have in such an environment. A "Community Knowledge Inventory" is included in which are listed questions about Newark that a staff member at the Center should be able to answer in order to be aware of problems and to help with them. Following this Inventory, the "Eight Phase Parent Training Program" is presented.

817. Roberts, Peter; Thornfeldt, Robert; Langley, Ivan I.; and Mark Karl, III.: "Immediate Treatment of Respiratory Distress in the Newborn," *American Journal of Obstetrics and Gynecology*, 101:293-297, June 1, 1968.

The "pathophysiology involved in distressed newborn infants" and several pertinent studies are reviewed. An immediate treatment method for respiratory distress in newborns and the results from its usage are then described. The treatment is initiated by the obstetrician in the delivery room. Techniques involved include the maintenance of temperature stability, positive pressure ventilation, and "the immediate injection of sodium bicarbonate." Laboratory work is also done immediately. One hundred twenty-nine newborns have been treated using this method; "105 survived and 24 died." The cases are analyzed with the need for further follow-up to determine morbidity noted.

818. Robertson, Ann Marie, and Crichton, John J.: "Neurological Sequelae in Children with Neonatal Respiratory Distress," *American Journal of Diseases of Children*, 117:271-275, March, 1969.

A follow-up study was conducted on 33 children who had had the respiratory distress syndrome (RDS), as defined, and who had had birth weights ranging from 1200 grams to 2040 grams. A control group of 33 children matched for selected factors but without RDS was formed. Both groups were regularly examined until 6 1/2 years of age. Methods used and results are described. Forty-two of the 66 children were found to be neurologically and intellectually normal; 14 RDS and 10 control children were not. Cerebral palsy was diagnosed in 6 RDS and 4 control children. Other handicaps found and intelligence test and electroencephalographical results are given. "Although neurological and developmental abnormalities were more frequent in infants with RDS, these differences were not statistically significant."

819. Robertson, John G.: "Examination of Amniotic Fluid in Rhesus Iso-immunization," *British Medical Journal*, 2:147-151, July 18, 1964.

Amniotic fluid was obtained from 252 patients with rhesus isoimmunization during the 33-35th weeks of gestation and analyzed. A "Diazo test" was "used to determine the presence of indirect bilirubin" and "the optical density at 450 mH above the baseline" was employed to estimate the severity of hemolytic disease in the fetus. The correct prediction rate using the two tests was 86%. The false predictions made and the subsequent management of the patients was discussed. The value of amniotic fluid examination in such cases to predict the severity of the disease and to aid in determining patient management is emphasized.

820. Robinson, R.J.: "Assessment of Gestational Age by Neurological Examination," *Archives of Disease in Childhood*, 41:437-447, Aug., 1966.

A study, in which 20 reflexes were tested for their value in predicting gestational age of newborns, is reported. Included in the study were 37 infants considered to be of "normal weight" and 25 infants who were considered "small-for-dates." Terms are explained, and the reflexes tested are listed. The responses were divided into four groups on the basis of results. The methods of illicitation, difficulties encountered, and the results from the 10 "responses whose presence or absence depended mainly on gestational age" are described in detail. Some of these 10 appeared to be more reliable predictors of gestational age than others. Other related studies are mentioned, and various "theoretical and practical" aspects are discussed.

821. Robinson, R.J. *Brain and Early Behavior Development in the Fetus and Infant.* Proceedings of a C.A.S.D.S. (Centre for Advanced Study in the Developmental Sciences) Study Group on "Brain Mechanisms of Early Behavioural Development" held jointly with the Ciba Foundation, London, February, 1968. New York: Academic Press, 1969. 374 pp.

This book contains the proceedings of the above Study Group. Various parameters of fetal and infantile brain development and function are explored in the papers and discussions Bibliographies are included.

822. Robinson, S.C.: "Pregnancy Outcome Following Oral Contraceptives," *American Journal of Obstetrics and Gynecology*, 109: 354-358, Feb. 1, 1971.

The application of a detailed neonatal examination procedure failed to reveal a statistically significant difference in the incidence of abnormalities when 1,250 neonates whose mothers had used oral estrogen - progestine contraceptives were compared to 1,250 newborns whose mothers had never used oral contraceptives. The mothers were matched for age and parity. Data is analyzed.

823. Roboz, Paul: "Etiology of Congenital Cerebral Palsy," *Archives of Pediatrics*, 79:233-250, July, 1962.

Results of an etiological survey of 198 cases of cerebral palsy are reported. Data were complete in all cases, and "cases of postnatal origin, Rh incompatibility and severe icterus were excluded." Previous etiological concepts are reviewed, and the role in etiology of primary factors, such as abnormal birth, asphyxia, brain hemorrhage, prematurity, abnormal pregnancy, hereditical factors, and unknown factors, is discussed with numerous studies referred to. Also considered is the "relationship between primary and secondary factors" such as sex, birth order, maternal age, pregnancy complications, multiple pregnancy, and congenital anomalies. Conclusions are presented which indicate "we are very far from revealing the role of all the factors and the involved interactions of known and unknown influences."

824. Robson, Peter: "A Method to Reduce the Variable Error in Joint Range Measurement," *Annals of Physical Medicine*, 8: 262-265, Aug., 1966.

Such a method, using "a pendulum-type goniometer" is discussed. It is "an attempt to overcome the inaccuracies of the standard moving-arm instrument."

825. Robson, Peter, and MacKeith, Ronald C.: "Shufflers with Spastic Diplegic Cerebral Palsy: A Confusing Clinical Picture," *Developmental Medicine and Child Neurology*, 13:651-659, Oct., 1971.

Diagnostic problems that arise when shuffling is present in normal infants and in those infants with cerebral palsy are discussed. Nine case reports of "children in whom shuffling behaviour was complicated by an otherwise classical spastic diplegia" are presented. A review of the records of a group of spastic diplegic patients revealed that the average age of diagnosis for those who did not shuffle was 17.2 months while the average of diagnosis for those who shuffled was 32 months. This difference was "highly significant." Conclusions and implications for treatment are presented.

826. Rogers, Michael G.H.: "The Early Recognition of Handicapping Disorders in Childhood," *Developmental Medicine and Child Neurology*, 13:88-101, Feb., 1971.

Divided into two parts, this article contains a review of the theoretical aspects of the early identification of handicapping disorders and a practical scheme providing for such early recognition. In Part I, entitled "Theory," the rationale behind early recognition and its importance in the general area of child health are discussed. The aspects of developmental medicine which especially pertain to early recognition are listed. Also considered are the need for developmentally orientated pediatric training, and the similarities and the contrasts between "early detection" and "medical screening." Explained in some detail are the concepts of and differences between risk registers and the child at risk. The scheme, outlined and diagrammed in Part II, is aimed at providing "periodic developmental surveillance" for all children and "thorough supervision" for 5-10% of children considered clinically "to be at relative high risk of handicap." Emphasized is the necessity of having coordination of effort among the various branches of health service and well-trained personnel.

827. Rogers, Michael G.H.: "Risk Registers and Early Detection of Handicaps," *Developmental Medicine and Child Neurology*, 10: 651-661, Oct., 1968.

Terminology associated with risk registers is explained in an attempt to alleviate confusion. Four aspects of risk registers as they have been developed in theory and as they have actually been found in practice are examined. Dr. Rogers' concludes that the concept "is an unsatisfactory basis for the early detection of handicaps." He presents an alternative plan which includes surveillance of development for all children and "special supervision of small 'high risk' groups."

828. Rooth, Gosta: "Early Detection and Prevention of Foetal Acidosis," *Lancet*, 1:290-293, Feb. 8, 1964.

Twenty-three women were studied during labor with 11 given sodium bicarbonate intravenously as described and 12 acting as controls. Maternal blood samples were taken during labor and after delivery and "samples were taken from clamped sections of the umbilical vessels." Maternal acidosis was found to usually begin in late labor when pains were of medium intensity. A high correlation was revealed between fetal and maternal acidosis thus indicating "that foetal asphyxia can be diagnosed early by measuring maternal metabolic acidosis during labour." Maternal and fetal acidosis was found to be significantly reduced when sodium bicarbonate was administered to the mother.

829. Rorke, Lucy Balian, and Spiro, Alfred J.: "Cerebral Lesions in Congenital Rubella Syndrome," *Journal of Pediatrics*, 70: 243-255, Feb., 1967.

Reported are the methods and results of a neuropathological study of the brains of nine infants under the age of one year with congenital rubella syndrome.

830. Rose, Arthur L., and Lombroso, Cesare T.: "Neonatal Seizure States; A Study of Clinical, Pathological, and Electroencephalographic Features in 137 Full-Term Babies with a Long-Term Follow-Up," *Pediatrics*, 45:404-425, Mar., 1970.

One hundred and thirty-seven full term infants, having had birth weights of 2500 gm or more, and who "developed seizures during the first 3 weeks of life" were studied and followed for a mean period of 3.8 years. The "clinical features" of the neonatal seizures and etiological factors are described. Hypocalcemia was noted in 28 cases. Neonatal electroencephalographic results are presented with the abnormalities classified into four types. Follow-up data is reported, including findings and the relation found between initial EEG results and subsequent outcome. "At the end of the study, about 50% of the subjects were found to be normal, while about 30% had survived with some serious neurological defect, and 20% had died." The neonatal EEG was shown to be valuable in prognosis. Much data are presented in charts, findings are discussed, and a method of "emergency diagnoses and treatment" of metabolic disorders in the neonate is outlined.

831. Rosen, M.G., and Scibetta, J.J.: "The Human Fetal Electroencephalogram. 2* Characterizing the EEG During Labor," *Neuropadiatrie*, 2:17-26, Aug., 1970. (Series: For I see #836, III see #837.)

Four principles that must be present in "an acceptable fetal EEG monitoring system" are listed, and the EEG monitoring technique developed and used by the authors is described. It was discovered that under normal conditions the EEG patterns found in utero were quite similar to those found after birth. Changes in EEG patterns after the maternal use of merperidine are explained as are various problems that occur in using this monitoring method. "The fetal EEG presents a relatively unused laboratory tool for the study of the fetal brain during birth."

832. Rosen, Mortimer G.: "Effects of Asphyxia on the Fetal Brain," *Obstetrics and Gynecology*, 29:687-693, May, 1967.

The effect of experimentally induced asphyxia on the brain of the fetal guinea pig was studied as described by using the electroencephalogram. The results of 12 acceptable experiments are reported in two categories: "(1) the response of the maternal and fetal brains to tracheal clamping and (2) the recovery phase or the return to normal preclamping brain-wave patterns in both mother and fetus." Asphyxia produced "rapid and recognizable changes" in the fetal EEG. It is suggested "that the electrical activity of the fetal brain may be a sensitive indicator of distress in utero."

833. Rosen, Mortimer G., and Satran, Richard: "The Neonatal Electroencephalogram," *American Journal of Diseases of Children*, 111:133-141, Feb., 1966.

Considered are the clinical applications of the electroencephalogram for neonates. The technique used by the authors, normal neonatal EEG patterns, abnormal EEGs in neonates with clinical evidence of brain damage, "atypical EEGs" in "high

*This article was published in this particular journal using an arabic numeral rather than a roman numeral as in the rest of this series.

risk" infants, "EEG patterns noted in response to sound and light," and the effect which drugs taken by the mother have on the EEG of the neonate are discussed and pictured.

834. Rosen, Mortimer G., and Satran, Richard: "Neonatal Electroencephalography," *American Journal of Obstetrics and Gynecology*, 89:619-625, July 1, 1964. (Series: For II see #835.)

The technique used in obtaining 50 electroencephalograms from a group of newborns is reviewed. The infants were selected because of the various modes employed in their deliveries in order to study the effect of various delivery methods on electrical brain activity. The normal and abnormal tracings are described, pictured, and correlated with some obstetrical factors.

835. Rosen, Mortimer G., and Satran, Richard: "Neonatal Electroencephalography. II. The EEG of the High Risk Infant," *American Journal of Obstetrics and Gynecology*, 92:247-252, May 15, 1965. (Series: For I see #834.)

The meaning in this study of the term "high risk infant" is clarified. Three hundred and seventy-seven tracings were obtained from 194 "clinically normal" newborns. Twenty of these infants, whose mothers had had normal pregnancies and deliveries, comprised the control group. This group had an atypical EEG rate of 9.5% which is considered normal. The "high risk group" consisted of 174 infants, whose mothers had had abnormal antepartum histories or abnormal deliveries. The atypical EEG rate of this group was 23%. The most common findings in these atypical EEG's were "spike and sharp waves." These terms are defined. Limitations of neonatal EEG's are discussed.

836. Rosen, Mortimer G., and Scibetta, Joseph J.: "The Human Fetal Electroencephalogram. I. An Electrode for Continuous Recording during Labor," *American Journal of Obstetrics and Gynecology*, 104:1057-1060, Aug. 1, 1969. (Series: For II see #831, III see #837.)

A technique for continuously recording the human fetal EEG during labor and birth using "specially constructed scalp electrodes" is described and pictured. Preliminary satisfactory results are presented. "The technique is offered as a method for studying the fetal brain during birth."

837. Rosen, Mortimer G.; Scibetta, Joseph J.; and Hochberg, Charles J.: "Human Fetal Electroencephalogram. III. Pattern Changes in Presence of Fetal Heart Rate Alterations and After Use of Maternal Medications," *Obstetrics and Gynecology*, 36:132-140, July, 1970. (Series: For I see #836, II see #831.)

Described are the technique used and the findings obtained and compared when fetal EEG monitoring during birth was employed during normal labor, prior to and after maternal drugs had been administered, and in cases involving fetal distress. Also presented are findings concerning the occurrence of "sharp waves before birth." "This technic for study of the fetal brain is suggested as potentially useful in ontogenic studies of brain damage."

838. Rosenbaum, Arthur L.; Churchill, John A.; Shakhashiri, Zekin A.; and Moody, Richard L.: "Neuropsychologic Outcome of Children Whose Mothers had Proteinuria during Pregnancy; A Report from the Collaborative Study of Cerebral Palsy," *Obstetrics and Gynecology*, 33:118-123, Jan., 1969.

By analyzing data on 50,000 women participating in the Collaborative Study, 51 mothers were found who had had proteinuria, as defined, during pregnancy. Data on the 53 infants of these women were studied. They had all "received either the Bayley scale, a test of mental and motor development given at 8 months of age, and/or the Binet I.Q. given at 4 years of age." The proteinuric subjects were matched on listed variables with controls. Five "outcome variables" are also listed, and results concerning these variables are presented. The offspring of the proteinuric mothers demonstrated "poorer neurologic and psychologic performance during infancy and childhood" than did the controls. Possible explanations are discussed.

839. Rosenblith, Judy F.: "The Modified Graham Behavior Test for Neonates: Test-Retest Reliability, Normative Data, and Hypotheses for Future Work," *Biologia Neonatorum*, 3:174-192, 1961.

In conjunction with the collaborative project of the NINDB the Graham Behavior Test for Neonates was examined as a possible neonatal prognostic device for cerebral palsy, mental retardation, etc. Detailed analyses of the subtests and score patterns are reported, and conclusions are listed in the "Summary."

840. Rosenblith, Judy F.: "Prognostic Value of Behavioral Assessments of Neonates," *Biologia Neonatorum*, 6:76-103, 1964.

"Some methodological problems" concerning early diagnosis and treatment of brain damaged children are briefly discussed. The values of the Collaborative Project of the NINDB for research purposes are stated as are the hypotheses from the author's previous study of the Graham Behavior Test for Neonates. Using the revised version of this test, neonates were examined. This report is primarily concerned with the results of the early follow-up exams of 242 of these infants. Data from the project's four-month pediatric and eight-month psychological exams were used as follow-up measures. The following factors, assessed during the neonatal period were compared to the later status (at four and/or eight months) of the infants: behavioral status at 1, 2, 3, and 4 days of age; Apgar scores; and neonatal status of the 31 premature infants included. Findings and conclusions are listed in the "Summary."

841. Rosenblith, Judy F., and Anderson, Rebecca B.: "Prognostic Significance of Discrepancies in Muscle Tension Between Upper and Lower Limbs," *Developmental Medicine and Child Neurology*, 10:322-330, June, 1968.

Infants who at birth had shown discrepancies in muscle tension between the upper and the lower limbs were examined at eight months of age. The tension rating system used is described in an appendix. The data is examined in relation to the neonatal assessment to determine the degree of discrepancy, the direction of the discrepancies from the normal, and which pair of limbs displayed hypertension or flaccidity. Medical background is also examined. Results are presented and related to prognosis.

842. Rosenblith, Judy F.; Anderson, Rebecca B.; and Denhoff, E.: "Hypersensitivity to Light, Muscle Tonus Discrepancies; A Follow-Up Report," *Biology of the Neonate*, 15:217-228, 1970.

Hypersensitivity to light had been found to be a possible indicator of neurological damage in the newborn in a previous study involving four infants. These neonates had also been shown to have discrepancies in muscle tone between the upper and lower extremities. A "blind" neurological, speech and hearing assessment of three of these children was conducted at three years of age by also assessing both "normal controls and cases with unusual muscle tonus." All three of the hypersensitive-to-light

infants still exhibited neurological abnormalities at age three years. A table details results. "Neonatal hypotonicity in the upper extremities coupled with hypertonicity in the lower is also prognostic of abnormalities in growth and development at three years, more so than at intervening examinations. When coupled with hypersensitivity to light it may be a sign of early cortical damage."

843. Rosenbloom, L.: "The Contribution of Motor Behaviour to Child Development," *Physiotherapy*, 57:159-162, April, 1971.

Considered are the contributions that motor behavior makes to the "physical, intellectual, emotional, and social progress" of the child. Also discussed are the therapeutic implications of the relationship between child development and motor behavior.

844. Rosner, Samuel: "The Relationship Between the Epilepsy of Cerebral Palsy and the Electroencephalogram," *Archives of Pediatrics*, 78:269-271, July, 1961.

A series of 142 children with "complicated cerebral palsy" between ages 6 months to 13 years are described with respect to clinical characteristics, the incidence of epilepsy, electroencephalographic results, the incidence of mental defect, and the "surgical pathology." Conclusions are listed.

845. Ross, E.J., and Christie, S.B.M.: "Hypernatremia," *Medicine*, 48:441-473, Nov., 1969.

The condition is introduced, and normal levels of sodium concentration in plasma are defined. An extensive outline, describing the causes of hypernatremia, is then presented followed by a similar outline concerning clinical manifestations. The fact that "hypernatremia may be both a cause and a result of brain damage" is explained. The effects of the condition on the brain and the possible occurrence of permanent brain damage are described. Also considered are the "consequences of hypernatremia on the distribution of body water and other electrolytes," "renal function in hypernatremia," "aldosterone secretion in hypernatremia," and treatment principles. The article is concluded with a discussion and review of the literature on "the importance of thirst." Numerous studies are mentioned throughout, and a lengthy bibliography follows the text.

846. Rosta, J.; Szoke, L.; and Agfalvi, Rose: "Primitive Reflex Responses of the Newborn in Icterus Gravis," *Clinical Pediatrics*, 4:264-266, May, 1965.

The sucking, rooting, grasp, and Moro reflexes were studied in a group of 204 newborns with icterus gravis. When the reflexes were tested, a significant relationship was found "between loss or decrease of the reflexes and the level of serum bilirubin." A decrease in sucking and "poor rooting reflexes" were the first signs of abnormality, and "loss of the grasp or Moro reflex suggests that kernicterus is imminent." The value of these reflexes as aids, with other tests, in determining the need for exchange transfusion is stated.

847. Rostafinski, Michael J.: "Maternal Age, Birth Rank and Prenatal Encephalopathies," *Virginia Medical Monthly*, 92:71-75, Feb., 1965.

One hundred and eighteen children who were age 10 or under and admitted to the Lynchburg Training School and Hospital in Virginia were studied "to determine whether there are factors other than the maternal age and birth rank contributing to the development of congenital encephalopathies." The children were divided into three groups: 1) "natal and postnatal encephalopathies," 2) "prenatal encephalopathies," and 3) "mongolism." Scattergrams and regression lines for each of the three groups are presented to show the relationships found. Significant differences among the three groups were detected. More patients were born to young mothers having low birth ranks in Group 1, while the patients in Group 2 were more uniformly distributed. Comparison of regression lines revealed differences which indicated "that in the occurrences of prenatal conditions, factors other than the normal interaction of maternal age and birth rank are in operation."

848. Roux, Jacques F.; Wilson, Ray; Yeni-Komshian, H.; Jassani, M.; and Jordan, J.: "Labor Monitoring; A Practical Experience," *Obstetrics and Gynecology*, 36:875-880, Dec., 1970.

A monitoring procedure that involved the measuring of intrauterine pressure, fetal heart rate, and scalp pH, and that was used in a "research-type hospital" is described. Also presented is a similar procedure that was used at a community hospital. Results are given, and the problems and limitations of labor monitoring are discussed. "It is concluded that the major

contribution of present-day monitoring methods is the attention that the obstetrician and nurse focus on the fetus and uterus of high risk patients."

849. Rowley, William F.; Tannrikulu, Orhan; Grossman, Aaron; and Hsia, David Yi-Yung: "A Controlled Study on Effect of Promethazine Hydrochloride and Meperidine Hydrochloride upon Serum Bilirubin Levels in the Newborn Infant," *Journal of Pediatrics*, 62:934-935, June, 1963.

A study is described in which the two drugs in question, when used either singly or combined, were found not to "significantly contribute to hyperbilirubinemia in the full term infant."

850. Rozdilsky, B.: "Kittens as Experimental Model for Study of Kernicterus," *American Journal of Diseases of Children*, 111: 161-165, Feb., 1966.

A method of using kittens in the "study of bilirubin toxicity in vivo" is described. Over 50 newborn kittens, who received 3 bilirubin solution injections, developed signs of brain damage and died between 24-60 hours after the first injection. When 30 kittens were given the bilirubin solution mixed with a "protective dose" of albumin and 25 kittens were given only the bilirubin, 27 of the 30 experimental kittens showed no signs of brain damage but were deeply jaundiced and were killed 60 hours after the injection. All 25 of the control kittens died 24-60 hours after injection. The value of using kittens in such experiments and the value of albumin in preventing brain damage in hyperbilirubinemia are discussed.

851. Rupp, Ralph R., and Wolski, William: "Hearing Testing in Young Children; Simple Technics Adaptable to Pediatric Office Practice for Screening Neonates, Infants, and Young Children," *Clinical Pediatrics*, 8:263-267, May, 1969.

The following audiologic procedures for use with young children are reviewed: "neonatal screening by intense sound," "infant screening by distraction" for use with infants ages 3 to 30 months, various types of "play audiometry" for use with children after the age of 30 months, and "simplified adult audiometric technics" for use with children over 5 years of age.

852. Ruppert, Elizabeth S., and Johnson, Ernest W.: "Motor Nerve Conduction Velocities in Low Birth Weight Infants," *Pediatrics*, 42:255-260, Aug., 1968.

Nerve conduction velocity was measured in the ulnar, median, and peroneal nerves at three days of age and at monthly intervals thereafter until age 12 months on eight full term and 11 preterm infants, all of whom had birth weights under 2,500 gm. The conduction velocities of the preterm group were significantly lower at birth, but by six months of age the conduction velocities of the two groups were "similar." "This technique affords an objective measurement of the maturity of the peripheral nervous system and the gestational age of the infant."

853. Russell, Elspeth M.: "Cerebral Palsied Twins," *Archives of Disease in Childhood*, 36:328-336, June, 1961.

Forty-four cerebral palsied twins were matched with 44 control twins with respect to "age of mother at delivery, social class of father and birth order" in an attempt to determine adverse factors in multiple pregnancies which cause cerebral palsy. The two groups were compared on a number of factors including fate of the other twin, sex, birth order, birth weight, maturity, pregnancy, delivery, neonatal course, ovularity, intelligence, sensory defects, and epilepsy." It is concluded that "in the majority of cerebral palsied twins the cerebral defect is unrelated to abnormalities of pregnancy and parturition or to maternal age. The most important factor appears to be low birth weight due either to multiple pregnancy alone, or to a combination of multiple pregnancy and preexisting foetal abnormality."

854. Russell, Elspeth M.: "Correlation between Birth Weight and Clinical Findings in Diplegia," *Archives of Disease in Childhood*, 35:548-551, Dec., 1960.

Birth weights of 200 diplegic children, ages 14 months to 13 years, were assessed and compared with the factors of intelligence, epilepsy, and strabismus. The patients were divided into two groups: paraplegics and tri- or tetraplegics. Terms are defined. Findings showed that the paraglegic patients were more likely to have been premature by weight at birth, were more intelligent, and showed less incidence of epilepsy. No differences between the two groups with respect to the incidence of strabismus was noted.

855. Russell, J.G.B.: "Radiological Assessment of Fetal Maturity," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 76:208-219, Mar., 1969.

Five methods of determining the maturity of the fetus are listed. Three thousand six hundred six cases were radiologically examined in order to assess the value of this method, and the factors of "parity, age of the mother, sex of the child, socioeconomic status of the parents, weight of the fetus, and season of the year were studied to determine their effect on radiological development rate. None of these were found to have any significant effect. Radiological immaturity and postmaturity were considered in relation to mortality rates. Much data was statistically analyzed and is presented. Conclusions are listed. The method is concluded to be "a valuable aid" in assessing fetal maturity but "is fallible in individual cases."

856. Rux, Robert E.: "Standing Platforms for Nonambulatory Patients," *Physical Therapy*, 51:1013-1016, Sept., 1971.

The need for physical handicapped and/or mentally retarded children to have adequate sensory and social stimulation is emphasized through a brief review of the literature. Individual and group standing platforms are described and pictured as a means of "assisting these children to become ambulatory." Construction details are given, and the values of these "stand-ups" are discussed. "The stand-up because of its design and function, offers the children security and the opportunity to develop strength, endurance, balance, and coordination, to stretch undesirable contractures, to perceive different sensations, and to engage [illegible]terpersonal interactions."

857. Ruys, J.H., and van Gelderen, H.H.: "Administration of Albumin in Exchange Transfusion," *Journal of Pediatrics*, 61:413-417, Sept., 1962.

The effect of administering albumin previous to exchange transfusion was studied in three infants with hyperbilirubinemia. On the basis of results the procedure is not recommended because "no increase in the concentration of indirect serum bilirubin" was detected, but "an unmistakable temporary increase of blood volume" was revealed. A slow exchange transfusion is suggested as being a safer and effective method of bilirubin removal.

858. Sachdev, K.K.; Taori, G.M,; and Pereira, S.M.: "Neuromuscular Status in Protein-Calorie Malnutrition; Clinical, Nerve Conduction, and Electromyographic Studies," *Neurology*, 21:801-805, Aug., 1971.

Studied were 30 children with kwashiorkor and 43 normal children, most of whom were between the ages of 18 months to four years. All were given neurological examinations. Neurological abnormalities detected in the children with kwashiorkor are listed and included mental changes, muscle wasting, general weakness, hypotonia, hyporeflexia, and gait abnormalities. "Nerve conduction velocity was delayed in 12 children," and "the needle EMG was abnormal in 14 of the 18 patients studied." "It is suggested that in sick, apathetic, and malnourished children in whom an accurate clinical assessment of motor and sensory function is not possible, nerve conduction and needle EMG studies are simple, reliable, and helpful in delineating neuromuscular status."

859. Sack, Robert A.: "The Large Infant; A Study of Maternal, Obstetric, Fetal, and Newborn Characteristics, Including a Long-Term Pediatric Follow-Up," *American Journal of Obstetrics and Gynecology*, 104:195-204, May 15, 1969.

A survey of the records of a large county hospital from the period 1947-1956 revealed that 766 infants were delivered that weighed 10 lbs. or more. These cases were studied "with respect to maternal, paternal, obstetric, fetal, and newborn characteristics." Results are reported. One hundred fourteen who survived delivery were diagnosed as being "severely depressed." A follow-up study was conducted on 200 of the survivors. Nine died before age seven years. Twenty-three were found to have "a severe neurological disability." A program aimed at improving results was begun in 1956. The features of this program are listed and the results of comparing the 1947-1956 series and the 1966 series are reported. A long-term follow-up evaluation of the infants in the latter series was in progress at the time of publication. "Discussion" follows.

860. Saling, E.: "Amnioscopy and Foetal Blood Sampling; Observations on Foetal Acidosis," *Archives of Disease in Childhood*, 41:472-476, Oct., 1966.

Amnioscopy and fetal blood sampling are discussed as two methods of assessing the condition of the fetus in late pregnancy and during labor. Conditions under which the methods should be

used and techniques are described. Also considered are the treatment of acidotic newborns used by the author and the positive results the author received when using the two assessment methods.

861. Saling, Erich: "Amnoiscopy" for the Symposium on Amniotic Fluid, edited by Fritz Fuchs. *Clinical Obstetrics and Gynecology*, 9:472-490, June, 1966.

Aspects considered in relation to this "new diagnostic method for recognition of fetal endangering in late pregnancy" are its clinical application; the technique; the indications for its use, including postmaturity, toxemia of pregnancy, amniotomy, and erythroblastosis fetalis; management in the above circumstances; clinical results obtained by the author; "pathophysiologic conclusions"; and the disadvantages of the method. Its safety and simplicity are stressed.

862. Saling, Erich. *Foetal and Neonatal Hypoxia in Relation to Clinical Obstetric Practice*. Translated from the German by F.E. Loeffler. Baltimore: Williams and Wilkins, 1968. 181 pp.

Outlined in this book are the clinical methods of assessing the condition of the fetus during pregnancy and labor. Discussions of the assessment of fetal heart action, amnioscopy, and sampling of fetal blood are included in individual chapters. Chapter 6 is concerned with the response of the fetus to hypoxia and maternal acidosis. Subsequent chapters deal with the treatment of the fetus during labor, the treatment of the "depressed" newborn, and the assessment of the newborn's condition. Description of techniques is frequent as are illustrations. References are in the form of shortened citations.

863. Saling, Erich, and Schneider, Dominique: "Biochemical Supervision of the Foetus during Labor," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 74:799-811, Dec., 1967.

This comprehensive, translated article on the authors' experience in obtaining and analyzing fetal blood samples in 850 cases, having signs of fetal distress, is divided into two parts: Part I is concerned with "The Signs, Evolution and Types of Foetal Acidosis" and Part II is "An Analysis of the Results,

Conclusions and Consequences." Results of investigating "the relationship between an abnormal pH and the clinical signs of foetal distress" are presented. Fetal acidosis is classified with the classification applied to the group of cases. The cases were analyzed by subdividing them into groups according to the degree of acidosis and describing the perinatal mortality that occurred within each group. Conclusions, including the consequences of the method, are listed and discussed.

864. Samilson, Robert L.: "Principles of Assessment of the Upper Limb in Cerebral Palsy," *Clinical Orthopaedics and Related Research*, 47:105-115, July-Aug., 1966.

The natural development of hand function in early life is described and compared to the abnormal development seen in children with cerebral palsy. Listed and explained are the "seven most common characteristics of the cerebral palsied hand" and "some of the general neurophysiologic characteristics of spasticity." Also described are the "biomechanical results" of these characteristics; the prerequisites in the cerebral palsied patients, the surgeon, and others for surgery of the upper limb; techniques and equipment which aid in upper limb assessment; the physical examination of the upper limb; and "specific clinical observations and their applications" in relation to the subject.

865. Sandifer, Paul H.: *Neurology in Orthopaedics*. London: Butterworths, 1967. 63 pp.

Considered individually in this volume are various neurological disorders appearing in infancy, childhood, and adulthood. Those disorders of infancy discussed are the "floppy baby syndrome" and cerebral palsy. The types of cerebral palsy are differentiated, clinical symptoms are described, and distinctions are made "between pyramidal and extrapyramidal syndromes," "between static and progressive disorders," and "between mental and neurological causes of handicap."

866. Sass-Kortsak, Andrew. *Kernicterus*. Report based on a symposium held at the IX International Congress of Paediatrics, Montreal, July, 1959. Toronto: University of Toronto Press, 1961. 221 pp.

This volume is the result of the above symposium. Papers within were presented to five panels each having a different area of concern: (A) "Kernicterus of Prematurity: Incidence and Aetiology," (B) "Factors Influencing the Life Span of the Red Blood Cell," (C) "The Metabolism and Excretion of Bilirubin," (D) "The Pathology of Kernicterus and the Cytotoxicity of Bilirubin," and (E) "Factors Influencing the Distribution of Bilirubin in the Body."

867. Saturen, Phoebe, and Tobis, Jerome S.: "Evaluation and Management of Motor Disturbance in Brain-Damaged Children, *Journal of the American Medical Association*, 175:588-591, Feb. 18, 1961.

Common signs of brain damage and assessment methods from birth through childhood are described. During the evaluation process in the first year of life, a home management program "directed toward stimulation and toward prevention of deformity" is suggested. Some of the formal treatment methods developed for brain-damaged children and the author's approach to formal treatment are briefly presented.

868. Saunders, R.V.: "Indications for Residential Treatment in the Early Years of Life," *Developmental Medicine and Child Neurology*, 5:162-163, Apr., 1963.

Early treatment, parental involvement in treatment, and home treatment are advocated for the young child. In areas where clinics, etc. are not available, a plan of mother accompaniment such as that suggested in the Ellis paper is preferred by this author. A summary of the Discussion period at Oxford follows this paper.

869. Schiff, D.; Chan, G.; and Stern, L.: "Fixed Drug Combinations and the Displacement of Bilirubin from Albumin," *Pediatrics*, 48:139-141, July, 1971.

Using two described methods, "the effects of fixed drug combinations on the displacement of bilirubin from albumin were assessed in two commonly used drugs; caffeine sodium benzoate and valium injectable (Diazepam)." "The fixed combination of caffeine sodium benzoate in recommended therapeutic doses (64 mg/ml) was found to affect the bilirubin-albumin binding by both methods." "Diazepam in its injectable form was found

to be a potent bilirubin-albumin uncoupler." The importance of assessing the displacement properties of both the components of drugs used for neonates and the components in combination is stated.

870. Schiffer, Morton A.; Ertel, Norman A.; Hellman, Louis M.; and Kobayashi, Mitsuo: "Combined Method for Evaluating Fetal Well-Being by Plasma Estriol Measurements and Ultrasonography," *American Journal of Obstetrics and Gynecology*, 108:1277-1286, Dec. 15, 1970.

Plasma estriol and ultrasonographic measurements were obtained in 21 "high-risk" obstetric patients. The former procedure was used to determine fetal well-being; the latter to assess "fetal size, growth, and age." Methods are described and results are pictured in graphs and a table. It was revealed that when the two methods were used together, the fetal status could be assessed more accurately. The value and application of the combined method in prematurity risks and pregnancy termination are discussed.

871. Schiller, Jack G., and Silverman, William A.: "Uncomplicated Hyperbilirubinemia of Prematurity," *American Journal of Diseases of Children*, 101:587-592, May, 1961.

Daily measurements of serum bilirubin concentrations were made in 188 premature infants during the first week of life. One hundred and ten of these were thoroughly examined at three years of age. A table provides information on the 78 children excluded from follow-up. Of the 110 examined, approximately one-fourth had had "uncomplicated" hyperbilirubinemia as neonates. Approximately one-fifth of these 110 children were found to have definite or suspected brain damage or mental retardation at age three. But no significant correlation could be demonstrated between hyperbilirubinemia and the damaged children. Comment is made.

872. Schindler, Adolf E.; Ratanasopa, Vannee; Lee, Tzu Y.; and Herrmann, Walter L.: "Estriol and Rh Isoimmunization: A New Approach to the Management of Severely Affected Pregnancies," *Obstetrics and Gynecology*, 29:625-631, May, 1967.

Estriol concentrations were compared in maternal urine, maternal plasma, and amniotic fluid in 62 pregnant women with Rh isoimmunization. In 16 of these all three values were obtained simultaneously. While maternal urinary estriol levels and maternal plasma estriol levels were not found to indicate the condition of the fetus with erythroblastosis, amniotic fluid estriol levels did. Severely affected fetuses had consistently low levels. "Determination of the concentration of estriol in amniotic fluid is recommended as an additional safeguard in the management of the Rh isoimmunized patient."

873. Schneider, Jan: "Low Birth Weight Infants," *Obstetrics and Gynecology*, 31:283-287, Feb., 1968.

The incidence, the sequelae, and the prevention of the delivery of low birth weight infants are discussed.

874. Schneider, Joerg, and Preisler, Otto: "Prevention of Rh Sensitization from Fetomaternal Microtransfusions," *Obstetrics and Gynecology*, 28:615-621, Nov., 1966.

Numerous clinical and experimental observations on the subject are reported with results presented from experiments dealing with the "life span of fetal erythrocytes in the adult circulation," "elimination of Rh-positive cord blood with anti-D serum," "experimental prevention of sensitization within the Rh system," and the "clinical application of the experimental data." "To 52 Rh-negative pregnant patients with a fetal transfusion of more than 50 cu. mm., a prophylactic injection of anti-D-serum was given intravenously at the time of delivery. After 3-5 months, none had produced antibodies, whereas one patient produced antibodies in an unprotected control group of 39 patients."

875. Schulman, C.A.; Smith, C.R.; Weisinger, M.; Fay, T.H.: "The Use of Heart Rate in the Audiological Evaluation of Nonverbal Children. Part I. Evaluation of Children at Risk for Hearing Impairment," *Neuropadiatrie*, 2:187-196, Dec., 1970. (Series: For II see #876.)

Hearing was assessed by using three methods in 19 children, ages 3 weeks to 8 years, who were considered to be at risk of audiological impairment for numerous reasons including brain

damage and mental retardation and in 5 children, ages 2 1/2 to 13 years, who had normal hearing. The three methods of assessment that were used and compared were "heart rate change, cortical evoked potentials, and conventional audiometry." A table contains data on the characteristics of the subjects, procedures, and results. Apparatus and methods used are also described. "The results of this study suggest that heart rate change is a sensitive measure of auditory functioning, which can be useful in the clinical evaluation of pre- and nonverbal children." The advantages of heart rate change over cortical evoked potentials are discussed.

876. Schulman, C.A., and Wade, Gerald: "The Use of Heart Rate in the Audiological Evaluation of Non Verbal Children. Part II. Clinical Trials on an Infant Population," *Neuropadiatrie*, 2:197-205, Dec., 1970. (Series: For I see #875.)

The hearing of 30 infants, ages 6 weeks to 9 months, who were considered normal but were "at some risk of physical or neurological impairment," was assessed by using apparatus "designed specifically for recording heart rate response to an auditory stimulus." "A major purpose of the study was to examine the feasibility of testing for hearing levels in infancy under ordinary clinical conditions." Procedures, apparatus, and results are presented. The results indicate that hearing function can be efficiently screened in pre-verbal children using the described methods "when suitable instrumentation is used."

877. Schulte, F.J.; Hinze, Gabriele; and, Schrempf, Gerlind: "Maternal Toxemia, Fetal Malnutrition and Bioelectric Brain Activity of the Newborn," *Neuropadiatrie*, 2:439-460, Apr., 1971.

"Twenty-two small for gestational age newborn infants of toxemic mothers were matched for both age from conception and from birth with 22 normal newborn infants." The two groups were compared in regard to bioelectric brain development. Both groups of infants and the methods used in blood glucose determinations, in polygraphic recordings, and in computer analysis are reported as are the results. Major findings are listed in the "Summary." The bioelectric brain maturation of "the abnormal group" was frequently found to be "retarded and/or abnormal." "The consistent abnormal EEG phenomena could - if at all - only exceptionally be explained by perinatal hypoxia or postnatal hypoglycemia and they occurred in the absence of any other overt

postnatal illness. The results suggest that central nervous system maturation does not proceed independently of the nutritional status of the fetus." Results and implications are discussed.

878. Schulte, F.J.; Michaelis, R.; Linke, Ilona; and, Nolte, Renate: "Motor Nerve Conduction Velocity in Term, Preterm, and Small-for-Dates Newborn Infants," *Pediatrics*, 42:17-26, July, 1968.

When nerve conduction velocity was measured in 20 normal, full term infants, 25 normal, small-for-dates infants, 38 preterm infants, 14 pairs of twins, and one set of triplets, "nerve conduction velocity was found to be dependent on the conceptional age but independent from the birth weight of preterm, fullterm, and small-for-dates newborn infants, plus twins of different birth weight." Subjects, the procedure, and the apparatus used, and the limitations of the method used are described as are the results. Because the "small-for-dates infants had significantly higher conduction velocity values than preterm infants of comparable weight," it was concluded that "measurement of motor nerve conduction velocity can be useful in differentiating preterm infants from full term, small-for-dates infants of comparable size."

879. Schulte, F.J., and Schwenzel, W.: "Motor Control and Muscle Tone in the Newborn Period; Electromyographic Studies," *Biologia Neonatorum*, 8:198-215, 1965.

Thirty healthy newborns and 33 with abnormal neurological signs were examined electromyographically and compared with respect to the monosynaptic reflex, the subsequent silent period, rhythmical motor activity, the Moro reflex, and spontaneous motor activity. The characteristics of the abnormal infants and the methods used are described as are the results of the various comparisons.

880. Schultz, Wilhemena: "Crawl Board," *Physical Therapy*, 46: 508, May, 1966.

Described and pictured is a "crawl board" designed "to facilitate the crawling attempt by overcoming body drag and stimulating activity of the upper and lower extremities" in young cerebral palsied children.

881. Schwartz, James F.: "Neonatal Convulsions; Pathogenesis, Diagnostic Evaluation, Treatment and Prognosis," *Clinical Pediatrics*, 4:595-604, Oct., 1965.

The above aspects are reviewed with several studies mentioned. The fact that neonatal convulsions are symptoms rather than a disease underlies all factors considered.

882. Schwarze, R.; Kintzel, H.W.; and Hinkel, G.K.: "The Influence of Orotic Acid on the Serum Bilirubin Level of Mature Newborn," *Acta Paediatrica Scandinavica*, 60:705-708, Nov., 1971.

Reported are investigations conducted to determine the effect on serum bilirubin levels of orotic acid administered to 52 mature neonates as described. Fifty other newborns acted as controls. "Contrary to the premature infants," (previous study, see Kintzel, et. al.) "in the mature newborn no decrease in the serum bilirubin was achieved by administration of orotic acid. The question of the possible mode of action of the orotic acid is discussed."

883. Scibetta, Joseph J.; and Rosen, Mortimer G.: "Response Evoked by Sound in the Fetal Guinea Pig," *Obstetrics and Gynecology*, 33:830-836, June, 1969.

Such response was evoked and studied by a described method in fetal guinea pigs near term. When low doses of pentobarbital were administered, "the amplitude of the fetal acoustic response is increased with minimal change in latency." Results suggest "that the latency interval increases and amplitude decreases in a distressed fetus." "Such studies provide a model to study the functioning fetal brain and its response to environmental changes."

884. Scibetta, Joseph; Rosen, Mortimer G.; Hochberg, Charles J.; and Chik, Lawrence: "Human Fetal Brain Response to Sound During Labor," *American Journal of Obstetrics and Gynecology*, 109:82-85, Jan. 1, 1971.

An experimental technique to obtain "the human fetal auditory evoked response (AER) to a sound stimulus" during labor is reported. It is hoped that this method may be useful in fetal brain study and may "reflect more closely the identification and prevention of brain damage found in infancy."

885. Scory, Jane; Lieberman, Elaine; and Hurt, Jean Marie: "The Role of the Speech, Hearing and Language Therapist in Cerebral Dysfunction." Paper prepared for the Symposium on "Cerebral Dysfunction: A Treatment Program for Young Children," *Clinical Pediatrics*, 5:357-360, June, 1966.

This role is discussed in relation to the young child. Included are detailed tables in which are described the normal sequence of speech and hearing development in the child from 1 month to 4 years of age. Also in the tables are methods of "encouraging proper speech habits in children with syndromes of cerebral dysfunction" within this age range.

886. Scrutton, D.R.: "Footprint Sequences of Normal Children Under Five Years Old," *Developmental Medicine and Child Neurology*, 11:44-53, Feb., 1969.

A study was conducted to provide information on the gait of normal children so that those known or suspected of having retarded or pathological movement could be compared with the normal. Data was obtained from 97 normal children ranging in age from 13 mos. to 4 years 11 mos. A method of gait analysis is presented, and the changes in step lengths and base and foot angles occurring within the age rage are given. Tables show the distribution of values for the most relevant measurements.

887. Scrutton, David: "Prevention and Management of Incorrect Spinal Posture in Cerebral Palsy," *Developmental Medicine and Child Neurology*, 8:322-326, June, 1966.

Preventive recommendations are made, and equipment for sitting on a chair, sitting on the floor, and lying is described.

888. Scrutton, David: "A Ramp-Shaped Cushion for Prone Lying," *Developmental Medicine and Child Neurology*, 13:228-230, April, 1971.

The construction of such a cushion and suggestions for usage for infants with cerebral palsy and other disorders are presented.

889. Seeds, A.E., and Behrman, R.E.: "Acid-Base Monitoring of the Fetus during Labor with Blood Obtained from the Scalp," *Journal of Pediatrics*, 74:804-807, May, 1969.

The physiologic rationale behind this method, the technique, and its present clinical value are described with numerous problems mentioned. The authors, at this time, do not advocate routine usage. More data is needed.

890. Semans, Sarah: "Specific Tests and Evaluation Tools for the Child with Central Nervous System Deficit." Adapted from a paper presented at the Symposium on The Child with Central Nervous Deficit, 1964. *Physical Therapy*, 45:456-462, May, 1965.

Aspects of evaluation of concern to the physical therapist are described. The assessment of motor behavior is emphasized. Three major areas to be evaluated are listed and separately discussed. These are the developmental, the pathological, and the adaptive areas. The values and uses of developmental tests are explained with several developmental scales described. The importance of testing equilibrium reactions is mentioned. Also described is "The Assessment Chart of Motor Abilities" and the manner in which it was developed. This chart is presented and further explained in the article following this one in the journal.

891. Semans, Sarah; Phillips, Rosalyn; Romanoli, Madeline; Miller, Ruth; and Skillen, Mary: "A Cerebral Palsy Assessment Chart; Instructions for Administration of the Test," *Physical Therapy*, 45:463-468, May, 1965.

This Assessment Chart and instructions for administering each test item are presented. Also explained are the values of the test, the testing procedures, and the grading system used.

892. Servin, Steve, and Janerich, Dwight, T.: "Four Factors Influencing Birth Weight." *British Journal of Preventive and Social Medicine*, 25:12-16, Feb., 1971.

The influences of birth order, maternal age and seasonal and secular trends on the birth weight of a population of 1,524,229 births were studied. "Mean birth weight was found generally to

increase with increases in both maternal age and birth order. When the joint influences of these variables on birth weight were separated a more complicated picture emerged." Highest mean birth weight infants were born in March, April, and May, and infants born during the summer were found to "have significantly lower than average birth weights." "The secular trend in birth weight was downward and this pattern was also consistent for all birth orders."

893. Sever, John L.; Hardy, Janet B.; Nelson, Karin B.; and Gilkeson, Mary Ruth: "Rubella in the Collaborative Perinatal Research Study. II. Clinical and Laboratory Findings in Children Through Three Years of Age," *American Journal of Diseases of Children*, 118:123-132, July, 1969. (Series: For I see #894.)

This longitudinal study involved the observation of 6,161 pregnant women in the United States during the 1964 rubella epidemic. Data are presented on these women and their children through age three. The study plan, the subjects, and the tests administered to the women and children are described. Pregnancy results are given in tables, and comment is made on the findings.

894. Sever, John L.; Nelson, Karin B.; and Gilkeson, Mary Ruth: "Rubella Epidemic, 1964: Effect on 6,000 Pregnancies. I. Preliminary Clinical and Laboratory Findings Through the Neonatal Period: A Report ffrom the Collaborative Study on Cerebral Palsy," *American Journal of Diseases of Children*, 110:395-407, Oct., 1965. (Series: For II see #893.)

Reported are the clinical and laboratory data from this longitudinal study of 6,161 women who were pregnant during the rubella epidemic of 1964. Detailed information is presented on the infants born to 750 of these women who had either experienced clinical rubella during the pregnancy or had been exposed during the first trimester but did not develop the disease. Tables show the pregnancy outcomes and the abnormalities found in the infants through the neonatal period in this subgroup of 750 pregnancies. Findings on the specific abnormalities recognized and on "reproductive wastage" are described in detail. The "Summary" consists of a listing of results in brief form.

895. Sever, John, and White, Lon R.: "Intrauterine Viral Infections," *Annual Review of Medicine*, 19:471-486, 1968.

The frequency of infections occurring during pregnancy is described. "Infections known to affect the fetus and the newborn" and their effects are listed. Those individually discussed include rubella, cytomegalovirus, and herpes simplex. Also considered is the value of determining IgM levels in the cord and in neonatal serum as a means of detecting congenital infections.

896. Sharma, Santosh D., and Trussell, Richard R.: "The Value of Amniotic Fluid Examination in the Assessment of Fetal Maturity," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 77:215-220, Mar., 1970.

Amniotic fluid specimens from 418 patients were obtained and analyzed "at various stages of pregnancy and in the first stage of labour." Methods are described. The patients were divided into five groups on the basis of whether single or serial samples were taken and on the basis of whether or not gestational duration was certain. One group contained twin pregnancies. A relationship was revealed between the proportion of orange stained cells and the degree of fetal maturity. "The technique was particularly valuable for distinguishing between immature and small-for-dates infants and was useful in assessing fetal maturity in patients for whom induction of labour or elective Caesarean section was planned."

897. Shelley, Heather J., and Neligan, G.A.: "Neonatal Hypoglycaemia," *British Medical Bulletin*, 22:34-39, 1966.

The clinical characteristics of this condition are described as is the work that has been done on the measurement of normal blood-glucose concentration. Also considered are the "control of the blood-glucose concentration" and the normal tolerance to hypoglycemia seen in newborns. Many pertinent studies are mentioned.

898. Shelley, Ursula: "Early Diagnosis of the Brain-Injured Child," *Physiotherapy*, 49:106-115, Apr. 10, 1963.

Sixteen "symptoms and signs which are shown by brain-damaged babies at different stages" are listed, and numerous "primary reflexes" are individually described with their differences

in normal and brain-damaged children noted. The "early activity" of normal and brain-damaged infants is compared with photographs illustrating differences. Also described are the "righting reflexes" and their development in normal and brain-damaged babies.

899. Sheridan, Mary D.: *The Handicapped Child and His Home.* London: National Children's Home, 1965. 63 pp.

In this book is published the Convocation Lecture delivered by the author in 1965. In the four chapters of the book, Dr. Sheridan discusses the "basic needs of normal and handicapped children"; early identification, assessment, and treatment of handicapped children; the guidance of parents of handicapped children; and "special education, periodic reassessment and final placement in the community."

900. Shipe, Dorothy; Vanderberg, Steven; and Williams, R.D. Brooke: "Neonatal Apgar Ratings as Related to Intelligence and Behavior in Preschool Children," *Child Development*, 39:861-866, Sept., 1968.

Sixty-six infants having Apgar scores of five or below at birth were matched with a like number having had an Apgar rating of 10. Thirty-three of these matched pairs and 11 unmatched children were given the Vineland Social Maturity Scale and the Pacific Multifactor Test at approximately 30 months of age. Six months later 24 matched pairs and 17 unmatched subjects returned to be given the Stanford-Binet, L-M, and a Parent Questionnaire was completed. Data on test results are presented and indicate that "low Apgar scores at birth were not related to later performance on psychometric tests or personality ratings."

901. Shubeck, Frank, Benson, Ralph C.; Clark, William W., Jr.; Berendes, Heinz; Weiss, William; and Deutschberger, Jerome: "Fetal Hazard after Rupture of the Membranes; A Report from the Collaborative Project," *Obstetrics and Gynecology*, 28: 22-31, July, 1966.

Data from 17,237 pregnant women and their babies in the Collaborative Project were analyzed "to determine whether there is an increasing threat to the fetus the longer it remains within the uterus after rupture of the membranes." Cases of spontaneous and artificial rupture of the membranes were differentiated, and frequency distributions were derived and are presented to show the relations between a number of variables and the interval from membrane rupture to birth. It was found that "inflammation of the membranes, cord, and fetus varies directly with increasing time between membrane rupture and the onset of labor."

902. Silberberg, Donald H.; Johnson, Lois; and Ritter, Linda: "Factors Influencing Toxicity of Bilirubin in Cerebellum Tissue Culture," *Journal of Pediatrics*, 77:386-396, Sept., 1970.

Previous work on the relationship between unconjugated bilirubin and kernicterus is reviewed. An experiment is reported in which "the relationship of pH and bilirubin:albumin ratio to the occurrence of bilirubin-induced damage in cerebellum cultures" was studied. Methods are described. Observation by light microscopy revealed a definite sequence of changes caused by sufficient amounts of unbound bilirubin. When the pH of the medium averaged "above 7.62 during the last 12 hours of the culture's lives" and the bilirubin:albumin molar ratio was held constant, high concentrations of bilirubin were not toxic. But when there was a decrease in pH below this level, cell damage increased proportionately, and when the bilirubin: albumin ratio was increased greater cytotoxicity occurred. "These findings support the thesis that unbound unconjugated bilirubin is responsible for neurological damage." Additional findings are reported, and results are interpreted.

903. Silberberg, Donald H.; Johnson, Lois; Schutta, Henry; and Ritter, Linda: "Effects of Photodegradation Products of Bilirubin on Myelinating Cerebellum Cultures," *Journal of Pediatrics*, 77:613-618, Oct., 1970.

"To study the possible neurotoxicity of the breakdown products" when bilirubin undergoes photodegradation, some myelinating cerebellum cultures were exposed "to media containing light-irradiated bilirubin and its photodecomposition products" while two other groups of cultures were respectively exposed to media containing the same amount of bilirubin but kept in

the dark and media which was irradiated but contained no bilirubin. The media pH was low enough for unirradiated bilirubin to cause toxicity. No damage was seen in the cultures "exposed to irradiated media in which the remaining diazotizable bilirubin was below 14 mg. per cent." The cultures exposed to unirradiated media received severe damage. The evidence supports the thesis that the use of phototherapy to prevent kernicterus is safe.

904. Simonson, E.D.; Schoen, Joanne A.; and Boyd, J.R.: "Experiences in Assessing Fetal Acid-Base State," *American Journal of Obstetrics and Gynecology*, 107:754-761, July 1, 1970.

Related in this article is the experience of the authors with microanalysis of fetal scalp blood as a method of detecting fetal distress. The method used to obtain the samples in 159 patients during labor is described. Forty of these patients, who had no obstetrical problems and showed no signs of fetal distress, were the control group. The other patients showed clinical evidence of fetal distress (69), toxemia (26), anemia (7), premature rupture of the membranes (9), or Rh sensitization (8). The relationship between pH value and Apgar score was determined for each group of patients. The conclusion was that fetal blood sampling is "a safe, simple, and an accurate method of evaluating fetal well-being" and is a useful and practical technique in the community hospital setting. "Comment" is made on other factors pertinent to the usage of the method and "Discussion" follows.

905. Singer, Judith; Westphal, Milton; and Niswander, Kenneth: "Relationship of Weight Gain during Pregnancy to Birth Weight and Infant Growth and Development in the First Year of Life; A Report from the Collaborative Study of Cerebral Palsy," *Obstetrics and Gynecology*, 31:417-423, Mar., 1968.

"Data on approximately 10,000 children in the Collaborative Study of Cerebral Palsy were analyzed" in a described manner to determine the above relationship. "The data indicate that the greater the maternal weight gain during pregnancy, the better the birth weight and growth and performance in the first year of the infant's life." It is suggested that the abandonment of obstetric practices of controlling weight during pregnancy may result in a lower incidence of prematurity and thus a reduction in mortality and morbidity.

906. Sinniah, D.; Tay, L.K.; and Dugdale, A.E.: "Phenobarbitone in Neonatal Jaundice," *Archives of Disease in Childhood*, 46: 712-715, Oct., 1971.

Serum bilirubin levels were studied in 41 jaundiced newborns to whom phenobarbitone was administered as described and in 42 jaundiced neonates who received no phenobarbitone. Of the 41 treated cases, 28 had normal birth weights and 13 had low birth weights. Of the 42 control cases, 32 had normal birth weights and 10 had low birth weights. In the infants of normal birth weight, mean serum bilirubin levels were significantly lower 48 hours after the initiation of treatment and no cases required exchange transfusion. Six of the normal birth weight controls required transfusion. "There were no significant differences in the mean serum bilirubin levels or in the exchange transfusion rates between treated and control low birth weight infants."

907. Sisson, Thomas R.C.: "Phenobarbital and Neonatal Jaundice," *Clinical Pediatrics*, 10:683-684, Dec., 1971.

Various methods of treating and/or preventing neonatal jaundice are mentioned. The qualities of phenobarbital that make it a promising drug in such treatment are described, and its use to date is reviewed. Then possible disadvantages of phenobarbital administration are considered, including "the possibility that phenobarbital administered to the fetus or newborn may affect protein synthesis in the brain."

908. Sisson, Thomas R.C.; Kendall, Norman; Glauser, Stanley C.; Knutson, Susan; and Bunyaviroch, Emorn: "Phototherapy of Jaundice in Newborn Infants. I. ABO Blood Group Incompatibility," *Journal of Pediatrics*, 79:904-910, Dec., 1971.

Thirty-five neonates with hyperbilirubinemia were assigned to either a phototherapy treatment group (19) or to a control group (16). Sixteen of the infants had birth weights of less than 2500 gm. Treatment methods, results, and discussion of the lamps used for phototherapy, the influences of birth weight and of race, and the need for exchange transfusions are presented. "Phototherapy caused a marked decline of serum bilirubin concentration at a time when such levels were rising in the control infants and prevented mean peak bilirubin concentrations in the treated infants from reaching the levels attained by the control infants. No treated infants required

exchange transfusion, but five of the control infants did. The heavier skin pigmentation in Negro subjects did not reduce the effectiveness of phototherapy."

909. Slatin, M.: "Extra Protection for High-Risk Mothers and Babies," *The American Journal of Nursing*, 67:1241-1243, June, 1967.

A public health nursing instructor optimistically reports on the intrapartum clinic begun at the University of Nebraska to provide comprehensive preconception, prenatal, delivery, and postnatal care for both mothers and children. The project is focused on women who have, or may have, conditions perilious to themselves or their babies, and who would not receive adequate care because of their low incomes.

910. Smallpiece, Victoria, and Davies, Pamela A.: "Immediate Feeding of Premature Infants with Undiluted Breast-Milk," *Lancet*, 2:1349-1352, Dec. 26, 1964.

One hundred and eleven newborns, weighing between 2 lbs. 3 oz. and 4 lbs. 6 oz. at birth, were fed undiluted breast milk very soon after birth using a described procedure. Findings concerning blood glucose and serum bilirubin levels and the time required to regain birth weight are presented and are discussed in relation to related literature. It was concluded that "early and adequate feeding" lowers serum bilirubin levels and "almost eradicates symptomatic hypoglycaemia." Early feeding also reduced the time taken to regain birth weight and thus may be instrumental in reducing the incidence of spastic diplegia.

911. Smyth, C.N.: "Exploratory Methods for Testing the Integrity of the Foetus and Neonate," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 72:920-925, Dec., 1965.

Several techniques to assess the condition of the fetus and newborn are listed and briefly reviewed. The need for obstetricians and pediatricians to be aware of these methods for the purposes of prevention and early diagnosis is stressed.

912. Solomon, G.E.; Hilal, S.K.; Gold, A.P.; and Carter, S.: "Natural History of Acute Hemiplegia of Childhood," *Brain*, 93:107-120, 1970.

Eighty-six children having had acute hemiplegia in childhood were reevaluated from 6 months to 20 years after onset in order to establish criteria for the prognosis of "future seizures, residual hemiparesis, intellectual capacity, and behavior disorders." Methods are described. The children were divided into etiological groups. This report is mainly concerned with two of these groups in which 41 patients were included. Of concern are those cases having "documented occlusive vascular disease" and those cases of "unknown origin." A classification system for occular vascular disease based on the angiograms of the 16 patients having this condition was devised. Five subgroups of the disease comprised the system, and each is explained. It was found that prognosis could be indicated in these two etiological groups. When seizures occurred at the onset of hemiparesis, the prognosis on the variables studied revealed to be poor. "Those children who began the illness with seizures were usually under 2 years of age." The value of angiography in both diagnosis and prognosis is stressed.

913. Solomons, G.; Holden, R.H.; and Denhoff, E.: "The Changing Picture of Cerebral Dynfunction in Early Childhood," *Journal of Pediatrics*, 63:113-120, July, 1963.

Twelve infants, studied in the Child Development Study at Brown University and considered on the basis of examinations to be "neurologically suspicious or abnormal" in the first year of life, were divided into two clinical groups at 12 months of age and followed for from one to three years. Group I contained five children having "spastic type of cerebral palsy," and Group II consisted of seven children having "developmental retardation." During follow-up four of the five cases of cerebral palsy were considered to be "completely resolved" and four out of the seven cases of developmental retardation were considered normal. Some of the case histories are presented, and trends seen in the two groups are described. "This changing picture demonstrates the need for caution in the interpretation of neurologic findings in early childhood and emphasizes the need for reappraisal of our present methods of examination."

914. Spira, Ralph: "Management of Spasticity in Cerebral Palsied Children by Peripheral Nerve Block with Phenol," *Developmental Medicine and Child Neurology*, 13:164-173, April, 1971.

Solutions of phenol were used to block selected peripheral nerves in 61 children having spastic cerebral palsy. The age range was from two to eight plus years. The technique, the

indications for treatment, the children, the follow-up methods, the results, the complications, and the implications are described. A total of 136 phenol blocks were performed. "Reduction of spasticity was achieved in a very large proportion of cases immediately following the injection, but there was large variation in the extent and duration of the relief obtained."

915. Stechler, Gerald: "A Longitudinal Follow-Up of Neonatal Apnea," *Child Development*, 35:333-348, June, 1964.

In a prospective study of 26 neonates, nine were classified at delivery as being apneic and 17 as normal. The infants were given the Gesell Developmental Scales as described between 6 weeks and 25 months of age and IQ tests as described between 35 and 59 months of age. Test results and analysis of data are presented. The apneic infants "were found to have significantly lower DQs during most of the first two years of life, although no difference was found at ages two and three years." "Their functioning was more variable from test to test, and their early scores are less predictive of outcome at age three than is true of the normal infants." These findings are interpreted.

916. Steer, Charles M., and Bonney, Walter: "Obstetric Factors in Cerebral Palsy," *American Journal of Obstetrics and Gynecology*, 83:526-531, Feb. 15, 1962.

Past etiological studies are reviewed. The obstetrical histories of 317 cerebral palsied patients were studied from the hospital charts with the disadvantages of this method being noted. In 276 of these cases the cerebral palsy was "unexplained," and these cases were then studied further with respect to the occurrence of multiple births, order of birth, prematurity, method of delivery, direct injury, asphyxia, maternal complications, and Caesarean Section delivery. Principle findings included a 28.6% incidence of prematurity and a 57% incidence of anoxia. Other results are listed and other possible undefined causes are discussed.

917. Stembera, Z.K., and Hodr, J.: "II. Mutual Relationships between the Levels of Glucose, Pyruvic Acid and Lactic Acid in the Blood of the Mother and of Both Umbilical Vessels in Hypoxic Fetuses," *Biologia Neonatorum*, 10:303-315, 1966.

Seventy hypoxic fetuses were divided into three groups according to the severity of the hypoxia and compared with respect to the blood levels of glucose, pyruvic acid, and lactic acid present in "the cubital vein of the mother just before birth" and in "both umbilical vessels just after birth." The relationships between these levels in the normal fetus had been determined by the authors in a previous study. The hypoxic fetus was found to produce more glucose and lactic acid as the extent of hypoxia increases. Reasons for this are discussed. It was concluded "that these changes are due to an increased part played by anaerobic glycolysis in the fetus due to impairment of the fetoplacental circulation." This is explained further.

918. Sterling, Harold M.: "Pediatric Rehabilitation," *Archives of Physical Medicine and Rehabilitation*, 48:474-479, Sept., 1967.

Among the topics of concern to the author in this paper are the family's role in the rehabilitation of the handicapped child, the child's readiness for treatment, the importance of history taking and physical examination, and frequent physical and intellectual problems of the handicapped child.

919. Stern, C.A.: "Delivery and the Defective Child; The Role of Obstetrics," *South Dakota Journal of Medicine*, 19:27, 30-32, June, 1966.

The types of etiological studies being done involving the defective child - retrospective and prospective - are described. Considered individually are the roles of labor, analgesia and anesthesia, birth trauma, prematurity, twinning, and "miscellaneous maternal factors" in the etiology of the defective child.

920. Stern, Francine Martin: "The Reflex Development of the Infant," *American Journal of Occupational Therapy*, 25:155-158, Apr., 1971.

Two sets of processes that take place in the acquisition of normal motor behavior are described. These are "the development of the normal postural reflex mechanism" and "the inhibition of some of the responses of the newborn." These processes are interferred with in the presence of cerebral palsy, etc.

Spinal reflexes, righting reactions, and equilibrium reactions and their normal development are described as is the normal motor development during the first two months of life and during "the next 10 months." The tonic reflexes and how they retard development in the brain damaged child are explained.

921. Stern, Leo, and Denton, Ronald L.: "Kernicterus in Small Premature Infants," *Pediatrics*, 35:483-485, Mar., 1965.

"Six cases of kernicterus in small premature infants in the absence of hemolytic disease" are discussed. All of the infants died. Four of the six never had bilirubin levels over 20 mg./100 ml. It is suggested that hypercapnoea, acidosis, and asphyxia were "involved in the occurrence of kernicterus in these babies" and that exchange transfusions be performed "at lower levels" in such cases.

922. Stern, Leo; Khanna, Narinder N.; Levy, Gerhard; and Yaffe, Sumner J.: "Effect of Phenobarbital on Hyperbilirubinemia and Glucuronide Formation in Newborns," *American Journal of Diseases of Children*, 120:26-31, July, 1970.

When 20 newborn, full term infants were given Phenobarbital for four days after birth, "significantly lower concentrations of serum indirect bilirubin" were found in comparison to the same number of control infants. When 10 infants with elevated serum bilirubin levels were given Phenobarbital from the fifth to the ninth day of life, levels were significantly lower by the tenth day than they were in the 10 control infants. The methods and results of "in vivo glucuronidation studies," with salicylamide used as a substrate, are also presented. Ten infants pretreated with Phenobarbital "showed a more pronounced average increase in the glucuronide fraction between the fifth and tenth day of life" than did 14 control infants. Implications are discussed.

923. Stewart, A.G., and Taylor, W.C.: "Amniotic Fluid Analysis as an Aid to the Ante-Partum Diagnosis of Haemolytic Disease," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 71:604-608, Aug., 1964.

The amniotic fluid samples from 93 pregnancies were obtained and analyzed for bilirubin content. Methods are explained. Upon delivery 51 of the infants were normal, as defined, 37 had hemolytic disease with seven of these being stillborn, "4 were anencephalic stillbirths, and 1 had aesophageal atresia." A relationship was revealed between a high bilirubin level in the amniotic fluid and the presence of hemolytic disease. It is suggested "that amniotic fluid bilirubin analysis is a valuable diagnostic tool but that it alone is not sufficient in all cases."

924. Stewart, R.J.C., and Platt, B.S.: "The Influence of Protein-Calorie Deficiency on the Central Nervous System," *Proceedings of the Nutrition Society*, 27:95-101, Mar., 1968.

Experiments on dogs involving the "production of congenital protein-calorie deficiency" are reported. "Dramatic changes" were noted when dogs of protein-calorie deficient mothers were put on protein deficient diets after weaning. Their posture and gait were abnormal as described and convulsions often occurred. "The intensification of the abnormal appearances during weeks 8-13 is followed by a partial recovery, but the congenitally malnourished animals continue to exhibit more marked abnormalities than those subjected to protein-calorie deficiency only after weaning." Implications are considered.

925. Stimmler, L.: "Infants Who Are Small for Gestational Age," *Proceedings of the Royal Society of Medicine*, 63:500-501, May, 1970.

Two groups of such infants are described. "The first is characterized by retarded length in relation to weight." "The infants in the second group are proportionately much more depressed in weight than height and have a wasted appearance." Differing etiological, clinical, and prognostic characteristics of these two groups are described. A retrospective study by A. McDonald of 700 children having birth weights of less than 4 lbs. is reviewed. "Significant differences in the incidence of abnormalities" were found between "those infants who were two standard deviations below the mean expected weight for their period of gestation, compared with those of normal weight." The incidence of cerebral palsy was much higher in those children who were premature.

926. Stine, Oscar C., and Kelley, Elizabeth B.: "Evaluation of a School for Young Mothers; The Frequency of Prematurity Among Infants Born to Mothers Under 17 Years of Age, According to the Mother's Attendance of a Special School During Pregnancy," *Pediatrics*, 46:581-587, Oct., 1970.

"Compared with relation to birth weight, length of gestation, trimester of first prenatal care, and infant mortality" were the 224 births of a group of teen-age mothers who attended a public school program in Baltimore designed for such mothers and the 224 births of a matched control group of teen-age mothers who did not attend such a program. There were significantly fewer "low birth weight" and "premature" infants, as defined, born to the mothers who participated in the program. Although eight infants in the control group died, only one infant died in the group whose mothers attended school. Aspects of the program and implications are discussed.

927. Stoch, M.B., and Smythe, P.M.: "Does Undernutrition during Infancy Inhibit Brain Growth and Subsequent Intellectual Development," *Archives of Disease in Childhood*, 38:546-552, Dec., 1963.

Twenty-one undernourished children, ages 10 months to 3 years, were compared with 21 adequately nourished control children, matched for age and sex, with respect to head circumference, I.Q., weight, height, parental I.Q., and head circumference, and living conditions. Characteristics of the children and examination methods are described. The children were studied "for periods of from two to seven years." Results support the hypothesis stated in the title. Both brain growth, as reflected by head circumference, and the I.Q. of the undernourished group were significantly lower than in the control group with no improvement noted during the study period. Implications are discussed.

928. Stoch, M.B., and Smythe, P.M.: "The Effect of Undernutrition During Infancy on Subsequent Brain Growth and Intellectual Development," *South African Medical Journal*, 41:1027-1030, Oct., 1967.

Twenty extremely undernourished infants from Cape Coloured were matched by age and sex with 20 controls of the same low socio-economic level and were followed as described for an 11 year period. The groups were compared with regard to head

circumference, height, weight, EEG, intelligence, and psychological status. The findings revealed "that under-nutrition during the period of active brain growth has resulted in a significant reduction in brain size and impairment of intellectual development."

929. Stockmeyer, Shirley: "A Pattern for Evaluation in the Assessment of Motor Performance." Adapted from a paper presented at the Symposium on The Child with Central Nervous System Deficit, 1964. *Physical Therapy*, 45:453-455, May, 1965.

Five steps that "are followed in the development and use of an evaluation device" are listed and are discussed separately.

930. Swack, Myron J., and Kokaska, Charles J.: "Programing Mobility Training: The Mathetics Approach," *Exceptional Children*, 36:461-463, Feb., 1970.

A programmed instructional method useful in the mobility training of physically handicapped children is described. The method is called "Mathetics" and was developed by T.F. Gilbert. It is described as being "a sequence of behaviors which begin with task accomplishment and, through successive additions of previous behavior segments, ultimately develop the complete chain of behavior prescribed by the programer." Use of the method in a practical situation is presented.

931. Swaiman, Kenneth F., and Wright, Francis S. *Neuromuscular Diseases of Infancy and Childhood.* Springfield, Illinois: C.C. Thomas, 1970. 261 pp.

A comprehensive description of the various neuromuscular diseases is presented with emphasis on differential diagnosis. In Chapters 1 and 2 aspects of diagnosis and laboratory tests are discussed respectively. The general scheme of the subsequent chapters is to divide upper motor neuron disease from lower motor neuron disease and then further subdivide. Each chapter includes a bibliography.

932. Swinyard, Chester A.; Swensen, James; and Greenspan, Leon: "An Institutional Survey of 143 Cases of Acquired Cerebral Palsy," *Developmental Medicine and Child Neurology*, 5:615-625, Dec., 1963

The term "acquired cerebral palsy" is defined. The records of 1,283 cerebral palsied chidren were analyzed, and in 143 of these cases the cerebral palsy was found to have been "acquired" with the range of the age of onset being between 3 months and 15 years. These cases were studied and findings with respect to etiological factors, frequency of the various clinical types of cerebral palsy, degree of motor involvement, "associated non-motor neurological disorders," and "functional status" are reported. Numerous related studies are mentioned as the results are discussed.

933. Sybulski, S.: "Determination of Free Estradiol-17B Levels in Pregnancy Plasma by Competitive Protein-Binding Method, "*American Journal of Obstetrics and Gynecology*, 110:304-308, June 1, 1971.

Described is "a competitive protein-binding (CPB) assay suitable for the determination of free estradiol-17-B levels in plasma of pregnant women" that uses human late-pregnancy plasma (HLPP) as the source of binding protein. Methods, materials, results, and method evaluation are presented. "The method is rapid enough that it might be of clinical use in assessing placental function in high-risk pregnancies and gives reproducible results which are similar to those that have been obtained with more time-consuming techniques." Estriol could also be measured by this method.

934. Sybulski, S., and Tremblay, P.C.: "Placental Glycogen Content and Utilization in Vitro in Intrauterine Fetal Malnutrition, *American Journal of Obstetrics and Gynecology*, 103:257-261, Jan. 15, 1969.

Thirty-four placentas from uncomplicated pregnancies resulting in healthy babies, six placentas from cases of toxemia, and 13 placentas from "pregancies complicated by intrauterine fetal malnutrition" were examined with respect to "glycogen content and rate of glycogen utilization in vitro." Methods are described. Glycogen content values were not significantly different in the three groups, but the cases of intrauterine fetal malnutrition had a significantly lower total placental glycogen content. No statistically significant difference could be found among the rates of glycogen utilization but the intrauterine fetal malnutrition group showed a 37% greater rate of utilization on the average. Normal utilization was seen in the toxemia cases. Physiological implications are discussed.

935. "Symposium: The Role of Sensory Experience in the Maturation of Sensorimotor Function in Early Infancy," *Clinical Proceedings of the Children's Hospital of the District of Columbia*, 22:247-284. Oct., 1966.

In this issue of this journal are contained four papers presented at the Postgraduate Course in Pediatric Neurology that was given at Children's Hospital in March of 1966. Dr. Richmond S. Paine, in the first paper, presents "Evidence from Clinical and Electrophysiological Studies and from Conditioning Experiments." Dr. Ann B. Barnet, in the second paper, discusses "Visual Responses in Infancy and Their Relation to Early Visual Experience." "Clinical Applications" are considered by Dr. Mark N. Ozer in the third paper, and Dr. Reginald S. Lourie describes "The Role of Individual Constitutional Differences in Early Personality Development" in the fourth paper.

936. "Symposium on Skeletal Muscle Hypertonia," *Clinical Pharmacology and Therapeutics*, 5:799-966, Nov.-Dec., 1964.

Published here are the 20 papers presented at this Symposium, many of which deal with aspects of the assessment, the measurement, and the treatment of hypertonia.

937. Tardieu, G.; Tardieu, C; Hariga, J.: and Gagnard, L.: "Treatment of Spasticity by Injection of Dilute Alcohol at the Motor Point or by Epidural Route: Clinical Extension of an Experiment on the Decerebrate Cat," *Developmental Medicine and Child Neurology*, 10:555-568, Oct., 1968.

After reporting favorable results in attempts to suppress the myotatic reflex by injection of dilute alcohol in decerebrate cats, the authors present a method used to obtain the same result in the treatment of cerebral palsy. A method of diagnosis, used to determine which cases will benefit from the treatment is described. In selected cases when 45% alcohol was injected "at the motor point of the muscle or by epidural way," the myotatic tonic reflex was suppressed "for several months and even up to 2 and 3 years." The procedure is felt to be safe.

938. Tatelbaum, Robert C., and Rosen, Mortimer, G.: "Applicability and Acceptability of Fetal Scalp Blood Sampling Technic," *Obstetrics and Gynecology*, 32:290-292, Aug., 1968.

Methods used and results obtained from usage of this technic with 86 obstetric patients at Strong Memorial Hospital in Rochester, New York are presented. The procedure was evaluated according to five criteria which must be fulfilled "for a method to be useful in monitoring the fetus during labor. "It must be: "(1) harmless; (2) easily performed; (3) useful during the greater part of labor; (4) able to give continuous, accurate information, and (5) convenient to perform." It was felt that this final prerequisite (5) is not fulfilled by fetal scalp blood sampling, and the inconvenience of the method "has severely limited its clinical applicability at our medical center."

939. Taylor, Don. *Staff Training in a Public School Setting*. Austin, Texas: University of Texas, Program for Staff Training of Exemplary Early Childhood Centers for Handicapped Children, [1971]. 62 pp. (Staff Training Prototype Series Vol. II, No. 8.)

Explained is the staff training program at the Chapel Hill Preschool Project for Developmentally Handicapped Children in Chapel Hill, North Carolina. The program is designed to train not only the immediate staff but also the families of the children, the students who gain experience in the project, the volunteers, the personnel of the public school systems, the community as a whole, and the "policy makers within the state." The five components of the "conceptual model" of the training program are described and individually discussed "in relation to the immediate staff." These

five are (1) "Needs assessment and the establishment of Training Objectives," (2) "the Organization of Training," (3) "the Content of Training," (4) "the Methods of Training," and (5) "the Trainers." Four separately explained components make up the organizational framework of the training program: (1) "a pre-service program," (2) "weekly in-service staff training conferences," (3) "systematic on the job supervision," and (4) "built-in opportunities for intra- and inter-project observations." On the final three pages "a brief narrative description and pictorial view of the total staff training" in the project is presented. Many of the forms used are included.

940. Taylor, Paul M.; Bright, Nancy H.; Birchard, Edna L.; Derinoz, Mahmut N.; and Watson, Doris W.: "The Effects of Race, Weight Loss, and the Time of Clamping of the Umbilical Cord on Neonatal Bilirubinemia," *Biologia Neonatorum*, 5:299-318, 1963.

Serum bilirubin levels were obtained in 142 full term and 173 premature infants on the third day of life. On some of these infants the umbilical cord had been clamped immediately at birth and in some the clamping had been delayed between 1-3 minutes. Inverse relationships between serum bilirubin levels and both birth weight and gestational age were revealed. White premature infants had higher values than did colored prematures. "Late clamped" prematures generally had higher values than did the "early clamped" prematures. Values were directly correlated with weight loss during the fourth day for both colored and white infants. Results also suggested an association between prolonged rupture of the membranes and hyperbilirubinemia. Factors found to be unrelated to bilirubin values are listed, and possible explanations for the relationships found are discussed.

941. Telford, Ira Rockwood, and Woodruff, Caroline Silence: "Prophylactic Value of Antioxidants and Related Compounds in Prenatal Anoxia," *Biologia Neonatorum*, 5:379-389, 1963.

Over 500 primigravida rats were divided into experimental and control groups. The experimentals were subdivided and given 28 various compounds. All rats were killed by 21 minutes of anoxia at term and delivered of their young by Caesarean Section. Those young who survived were reared with foster mothers, tested in a Skinner box after six months, and sacrificed for histologic study. Nineteen of the 28 antioxidants and related compounds "significantly improved the survival rate." Ascorbic acid, phenothiazine, alpha tocopherol, and glucose are commented on in more detail as to their mode of action, cite of action, and possible value in preventing lesions

resulting from neonatal anoxia. Other factors related to survival are also discussed.

942. ten Berge, B.S.: "The Influence of the Placenta on Cerebral Injuries," *Cerebral Palsy Bulletin*, 3:323-331, 1961.

The results of a study by Prechtl, in which infants resulting from complicated pregnancies or deliveries were followed, is reported to emphasize the need for increased interest by obstetricians in hypoxia and "the anatomy and function of the placenta, and especially the foetal circulation. Current research on the later is reported and the value of serial urinary estriol determinations to measure placental insufficiency and to aid in determining the proper time to induce labor is stated. Recommendations to improve the safety of the birth process are made.

943. Terplan, K.L.: "Histopathologic Brain Changes in 1152 Cases of the Perinatal and Early Infancy Period," *Biologia Neonatorum*, 11:348-366, 1967.

The CNS of 1152 non-selected infants who had died perinatally or in early infancy were microscopically examined. Methods are described. Two groups were formed: (1) Stillborns, immatures, prematures, and full-terms up to 14 days old (936 cases), and (2) infants age 15 days to 3 months (216 cases). Detailed histopathologic findings are reported and are summarized as showing "significantly more frequent neuronal hypoxic changes in the cerebral cortex of the full term as compared to the premature, and a greater incidence of intraventricular and parenchymatous hemorrhages, and necrosis in the periventricular white matter of the premature." Also noted was "a frequent lack in correlation between clinical symptoms of neurologic disorders and histopathologic findings in the brain."

944. Thomas, Andre; Chesni, Yves; and Dargassies, S. Saint-Anne. *The Neurological Examination of the Infant*. London: Spastics Society in association with Heineman Medical Books, 1960. 50 pp. (Little Club Clinics in Developmental Medicine, No. 1.)

Described in this booklet are techniques used and typical responses illicited in the neurological examination of both the newborn and the older infant. Many illustrations of positions and reactions are included.

945. Thompson, Horace E.; Holmes, Joseph H.; Gottesfled, Kenneth R.; and Taylor, E. Stewart: "Fetal Development as Determined by Ultrasonic Pulse Echo Techniques," *American Journal of Obstetrics and Gynecology*, 92:44-52, May 1, 1965.

Previous work in this area and the equipment used in these techniques are briefly described. Studies in which ultrasonic measurements were made in utero are reported. Also presented are formulas used to estimate fetal weight from ultrasonic measurements of the chest circumference and the biparietal diameter of the head. When these two measurements were combined, it was usually possible to estimate fetal weight to within 400 grams. Uses for ultrasonic techniques are mentioned and "Discussion" follows the article.

946. Thompson, Horace E., and Makowski, Edgar L.: "Estimation of Birth Weight and Gestational Age," *Obstetrics and Gynecology*, 37:44-47, Jan., 1971.

The biparietal and anteroposterior chest diameters were measured in 1079 neonates, and "these measurements were compared with fetal weight and gestational age." Results of estimating birth weight and gestational age from the biparietal diameter alone, from the anteroposterior chest diameter alone, and from both of these measurements are presented along with the formulas and graphs used in the estimation. "A clinically significant fetal weight estimate can be made from the biparietal and anteroposterior chest diameters. Estimation of gestational age by this method, however, is not significantly better than the estimation made from menstrual history alone."

947. Thompson, W.; Lappin, T.R.J.; and Elder, G. Elizabeth: "Liquor Volume by Direct Spectrophotometric Determination of Injected PAH," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 78:341-344, Apr., 1971.

"A simple and more rapid method" than the diazo method for estimating the volume of amniotic fluid is presented. "PAH (sodium aminohippurate) is injected into the amniotic cavity and after complete mixing its concentration in the liquor is determined" by spectrophotometric measurement. The advantage of simplicity is stressed.

948. Thomson, A.M.; Billewicz, W.Z.; and Hytten, F.E.: "The Assessment of Fetal Growth," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 75:903-916, Sept., 1968.

Fifty-two thousand and four births that took place between 1948 to 1964 in Aberdeen, Scotland were analyzed with respect to gestational age, birth weight, sex, pregnancy number, maternal size, and social class. Fetal growth standards were derived on the basis of results and are presented.

949. Thomson, Angus M.: "The Evaluation of Human Growth Patterns; Nutrition, Growth, and Mental Development," *American Journal of Disease of Children*, 120:398-403, Nov., 1970.

The author states his belief "that retardation of growth may or may not have permanent consequences, depending on its timing, severity, and duration." Relevant studies on growth and development and lack of such during the fetal, neonatal, infantile, preschool, school, and adolescent periods are discussed. It is suggested that "there may be three critical periods" of growth during which times permanent effects may result from growth interruptions. The critical periods are felt to be the late fetal period, from age 6 months to 2 years, and adolescence. Healthy parents and a "healthy society" will do much to decrease impaired growth and development.

950. Thorn, Ingrid. *Cerebral Symptoms in the Newborn; Diagnostic and Prognostic Significance of Symptons of Presumed Cerebral Origin.* Copenhagen: Munksgaard, 1969. 174 pp.

After a detailed review of the literature on cerebral symptoms in newborn infants, a description is given of the undertaken study, the report of which is the object of this volume. Data were obtained from records of 291 children who were born during the period 1946 to 1955, and who had been admitted to the Department of Paediatrics at Copenhagen County Hospital, during the neonatal period because of suggested cerebral damage. Follow-up examinations were conducted on 95% of these children from 1958 to 1959. The results at follow-up are reported, and the diagnostic significance of the neonatal symptoms is reported. The significance of the neonatal symptoms for the prognosis of immediate survival as well as the long term prognosis is discussed, and the role of etiological factors as related to the diagnostic and prognostic value of the neonatal symptoms is presented. The high rate of prematurity is discussed, and sex differences are briefly mentioned.

951. Thorn, Ingrid: "Primidone and Chlordiazepoxide in Cerebral Palsy," *Developmental Medicine and Child Neurology*, 4:325-327, June, 1962.

Reported is a trial usage of the drug chlordiazepoxide in 50 cases of cerebral palsy. The age range of the children was from one to fifteen years. The following results were obtained: "(1) a reduction in muscular hypertonicity, (2) improved performance of voluntary movements, (3) some reduction in hyperkinetic movements, (4) less disturbance of sleep by muscular activity and crying, but (5) no definite effect on emotional reactions." The most favorable results were in patients with athetosis. Dosages and side-effects are discussed.

952. Thysen, Benjamin; Meyer, Claude J.; and Gatz, Michael: "Semiautomated Assay for Rapid Determination of Estrogens in Late-Pregnancy Urine," *Obstetrics and Gynaecology*, 63:799-803, Nov., 1970.

A "convient, rapid, and reproducible" system is described that enables mass screening in late pregnancy to evaluate fetal health.

953. Till, Dorothy: "The Uses of Reflexes in the Restoration of Normal Movement," *Physiotherapy*, 55:2-8, Jan., 10, 1969.

Numerous "excitatory and inhibiting reflexes that can be used to strengthen muscles or mobilize joints" are described.

954. Tizard, J.: "The Experimental Approach to the Treatment and Upbringing of Handicapped Children," *Developmental Medicine and Child Neurology*, 8:310-321, June, 1966.

The experimental approach is needed in organizing services for mentally and physically handicapped children. The shortage of services, the current expansion of services, and the development of experimental methods in psychology and sociology provide an opportunity to utilize this approach. Pilot studies or controlled clinical trials are widely used in drug treatment. They should also be conducted before implementing new methods and services for chronically disabled children. Problems presented by the experimental approach to diagnosis, treatment, and evaluation of treatment are discussed.

955. Tizard, John Peter Mills: "After Effects of Neonatal Brain Damage," in *Child Care in Health and Disease*, edited by Albert Dorfman. Chicago: Year Book Medical Publishers, 1968. pp. 183-198.

The author in this article is concerned with the neonatal illnesses that are related to brain damage. The sick newborn is emphasized and the problems of evaluating the sick infant are discussed. Studies of hypoxia and hypoglycemia, conducted by the author and his colleagues, are presented to emphasize the need for much intensive study into the relationship between neonatal illness and subsequent brain damage.

956. Togut, Myra R.; Allen, John E.; and Lelchuck, Louis: "A Psychological Exploration of the Nonorganic Failure-to-Thrive Syndrome," *Developmental Medicine and Child Neurology*, 11:601-607, Oct., 1969.

This "Syndrome" is defined and the relevant literature is briefly reviewed. The results of a study of nine infants, admitted to the hospital for growth failure and in whom no organic disorders were demonstrated, are reported. The findings with respect to maternal and family history, inpatient evaluation, and psychological evaluation of the mothers are described. Listed in the summary are three elements which need to be identified in diagnosing this "Syndrome."

957. Torres, Fernando, and Blaw, Michael E.: "Longitudinal EEG-Clinical Correlations in Children from Birth to 4 Years of Age," *Pediatrics*, 41:945-954, May, 1968.

One hundred and thirty children who had had an EEG as neonates were followed. EEG's were repeated at ages, 4, 8, and 12 months "and then at yearly intervals." Regular clinical examinations, including neurological examinations, were conducted as described. At the time of this report all the children were at least four years of age. The terms "clinical abnormalities" and "EEG abnormalities" are defined as they are used in this study. Twenty-three children had "clinical abnormalities," and 30 "children had EEG characteristics which are frequently considered abnormal in their neonatal period." Relations between the two groups are presented. It was felt that the results confirmed previous findings "that the neonatal EEG has no significant prognostic value for the subsequent clinical development of children."

958. Touwen, Bert C.L.: "A Study on the Development of Some Motor Phenomena in Infancy," *Developmental Medicine and Child Neurology*, 13.435-446, Aug., 1971.

The motor development of 50 healthy infants was studied from two weeks after birth "until they walked unsupported." A total of 816 examinations of the babies was conducted with the technique used and results concerning the neonatal palmar grasp, the moro response, locomotion in the prone position, voluntary grasping, development of sitting, sitting, and walking unsupported described. Three conclusions are presented. "The results show very little interrelationship between the developmental courses of the different items," making evident the need for comprehensive assessment in the evaluation of motor development.

959. Towbin, Abraham: "Central Nervous System Damage in the Human Fetus and Newborn Infant," *American Journal of Diseases of Children*, 119:529-542, June, 1970.

The author reviews aspects of his work on CNS damage in the fetal and neonatal periods. Such damage is of clinical concern because of the resulting neonatal mortality, cerebral palsy, mental retardation, etc. The results of a clinical-pathological study of autopsies from over 600 stillborn and live born infants, 78% of whom were premature, are presented. It was found that mechanical trauma and hypoxia were the two main causes of CNS lesions. Four principle types of CNS damage were found to appear in the fetus and newborn: (1) "subdural hemorrhage"; (2) "spinal cord and brain stem damage"; (3) "hypoxic cerebral periventricular (infractional) damage"; and (4) "cortical cerebral infarctional damage". Features of each of these types are described. It is felt that the majority of CNS lesions are of prenatal origin "and may be well advanced prior to labor." The "two patterns of cerebral damage" seen in cerebral palsy and mental retardation are described briefly. When these are correlated with patterns of damage seen in the newborn, "a formula emerges for defining the time of incurrence of the cerebral damage." This view and its implications are briefly discussed.

960. Towbin, Abraham: "Cerebral Hypoxic Damage in Fetus and Newborn," *Archives of Neurology*, (Chicago) 20:35-43, Jan., 1969.

A series of 600 cases of stillborn fetuses and neonatal deaths were histopathologically studied by using the technique of whole-brain serial section. Two basic patterns of hypoxic cerebral damage were seen. In the fetuses and newborn infants delivered between the 25th and 35th week of gestation the lesions were largely located in

the periventricular region of the brain, however, in the mature infants the cerebral damage was found to be mainly cortical. The role of these two basic types of neonatal cerebral hypoxic damage is discussed in relation to the development of corresponding forms of chronic cerebral damage found in cerebral palsy and mental retardation.

961. Towbin, Abraham: "Organic Causes of Minimal Brain Dysfunction: Perinatal Origin of Minimal Cerebral Lesions," *Journal of the American Medical Association*, 217:1207-1214, Aug. 30, 1971.

The syndrome of minimal brain dysfunction is described as one of the possible sequelae of neonatal brain damage as are findings from neuropathological studies of "over 600 neonatal cases." The four principle forms of CNS damage found in the human fetus and newborn are listed and described. Hypoxia is singled-out as being a major causal factor in CNS disorders. Its varied neurological effects, the possible forms of damage (deep and cortical) it can cause, and the relationship of gestational age to these forms are considered. "In the premature, the damage affects primarily periventricular deposits of germinal tissue. At term, the loss is mainly in the cortex." Also listed and discussed are the three stages through which "the development of cerebral infarction in the perinatal period evolves" and "specific biologic factors" which influence "this predilection for localization of hypoxic cerebral damage." The characteristics of the acute and chronic lesions are explained and compared. "The conclusion is inescapable that lesser hypoxic lesions occurring in the fetal-neonatal period are correspondingly responsible for the appearance later of lesser patterns of clinical disability, for varied subtle forms of attenuated, distorted CNS function." Characteristics of these "lesser hypoxic lesions," their incidence, and their effects are presented.

962. Towell, Molly E.: "The Influence of Labor on the Fetus and the Newborn," *Pediatric Clinics of North America*, 13:575-598, Aug., 1966.

Maternal and fetal "hemodynamic changes" that occur during labor are described, and the term, asphyxia, is defined and discussed in relation to its occurrence during labor and delivery. Saling's technique of fetal blood sampling during labor is presented as a means of determining getal acid-base status. Also considered are the maternal, placental, fetal, and neonatal factors that may cause fetal and neonatal asphyxia. The techniques of relieving fetal distress by the "administration of oxygen and infusion of glucose to the mother" are explained. Other

influences on the fetus and newborn occurring during labor that are considered include the administration of pain relief to the mother and the "mechanical effects of labor." Methods used to evaluate the condition of the fetus and neonate are briefly mentioned, and vaginal delivery is compared to abdominal delivery with regard to the occurrence of mortality and morbidity.

963. "Transfusions Suggested for Neonatal Disorders," *Journal of the American Medical Association*, 211:1459-1460, Mar. 2, 1970.

Researchers at the University of Pennsylvania School of Medicine report that exchange transfusions may be of value in treating infants with respiratory distress syndrome. The rationale, the results with two infants, and future plans are explained.

964. Trolle, Dyre: "Decrease of Total Serum-Bilirubin Concentration in Newborn Infants after Phenobarbitone Treatment," *Lancet*, 2:705-708, Sept. 28, 1968.

In a controlled study, phenobarbitone was administered to 808 neonates with birth weights over 2,500 g. by using one of the following methods: (1) given only to the pregnant women (117 patients), (2) given only to the infant (452 patients), and (3) given to both the pregnant women and the infants (239 patients). Procedures and results for each group are presented. The latter method of treatment (3) "proved the most effective - the decrease in infants with 13 mg. or more of bilirubin per 100 ml. serum was 94% and the highest value among the infants treated in this way was 13.2 mg. per 100 ml." The safety and action of phenobarbitone are discussed.

965. Trombly, Thelma: "Linguistic Concepts and the Cerebral Palsied Child," *Cerebral Palsy Journal*, 29:7-8, Mar.-Apr., 1968.

The terms "speech" and "language" are differentiated in this article. Speech is but one facet of language. The young child with cerebral palsy deviates from the normal pattern of language development not only because of his physical disabilities, but also because of his limited social environment. He must constantly be stimulated by the speech of others, by visual experience, and by toys, etc., to increase his potential for acquiring language.

966. Twitchell, Thomas E.: "The Neurological Examination in Infantile Cerebral Palsy," *Developmental Medicine and Child Neurology*, 5:271-278, June, 1963.

Additional tests which the author and his associates have added to the usual neurological examination in order to determine more precisely the physiological nature of the motor deficit in cases of infantile cerebral palsy are described. Included are the tonic neck, labyrinthine, and righting reflexes, the positive supporting and contact placing reactions, the traction and avoiding responses, the grasp reflex, and the contact reaction of the lips.

967. Twitchell, Thomas E.: "Sensation and the Motor Deficit in Cerebral Palsy," *Clinical Orthopaedics and Related Research*, 46:55-61, May-June, 1966.

The importance of considering the sensory deficits as well as the motor in cerebral palsied patients is stressed. Sensory disturbances found in the hands of cerebral palsied are described with several pertinent studies mentioned. Also considered are the relationship between movement and sensation and the relationship between the motor and the sensory deficits in cerebral palsy.

968. Twitchell, Thomas E.: "Variations and Abnormalities of Motor Development." Adapted from a paper presented at the Symposium on The Child with Central Nervous System Deficit, 1964. *Physical Therapy*, 45:424-430, May, 1965.

Several variations in motor development that are not related to CNS abnormalities are described, and the fact that no clear division exists between normal and abnormal motor development is discussed. Considered in detail are the characteristics of the motor deficit in cerebral palsy. Individually described are the defects in resting posture, prehension, sitting, standing, gait, and speech, and the presence of involuntary movements (athetosis), abnormalities and deformities of posture, and passive movement resistance (spasticity). The author feels that the classifications of cerebral palsy are physiologically artificial and that treatment should be individually rather than class oriented.

969. Twitchell, Thomas E., and Ehrenreich, Donald L.: "The Plantar Response in Infantile Cerebral Palsy," *Developmental Medicine and Child Neurology*, 4:602-611, Dec., 1962.

In order to study physiologically the plantar response in children having infantile cerebral palsy, the response was elicited in various areas of the sole of the foot by using both light and firm stimuli in 42 children having various types of congenital cerebral palsy. It was found that "both flexor and extensor plantar responses could be obtained, the result obtained depending on the region of the foot stimulated and on the quality of stimulation." The physiological mechanisms determining these reactions were defined. The grasp reflex and the proprioceptive positive supporting reaction caused plantar flexion, and the avoiding response and the nociceptive flexion reaction caused plantar extension. The relation of these responses to gait and "some aspects of the plantar reactions in the normal infant" are considered. Other work in the area is reviewed.

970. Ulstrom, Robert A., and Eisenklam, Eric: "The Enterohepatic Shunting of Bilirubin in the Newborn Infant. I. Use of Oral Activated Charcoal to Reduce Normal Serum Bilirubin," *Journal of Pediatrics*, 65:27-37, July, 1964.

Two series of experiments involving normal babies and designed to determine the effect of "orally administered activated charcoal" on neonatal serum bilirubin levels are described. In the first series, 15 test infants were given the charcoal followed by glucose water initially at 12 hours of age while the 17 controls received only glucose water. No difference in bilirubin values was noted. In the second series the test infants received the charcoal followed by the glucose water at four hours of age initially while the controls were given only glucose water. "Significantly less bilirubinemia" occurred in the test infants. Rationale behind the study, selection methods, factors related to the charcoal, lab methods, data interpretation, results, and implications are presented.

971. Underhill, Rosemary A.; Beazley, John M.; and Campbell, Stuart: "Comparison of Ultrasound Cephalometry, Radiology, and Liquor Studies in Patients with Unknown Confinement Dates," *British Medical Journal*, 3:736-738, Sept. 25, 1971.

A study is described in which ultrasound cephalometry, radiology, and liquor amnii tests were employed to estimate fetal maturity in a group of patients in whom the estimated date of confinement was unknown. The results of the three methods were compared for accuracy. "The best prediction was given by ultrasound cephalometry. Liquor studies were least helpful."

972. United Cerebral Palsy Associations. *Realistic Educational Planning for Children with Cerebral Palsy; Pre-School Level.* New York: U.C.P. Associations, 1967. 39 pp.

Educational philosophy and educational classification concerning the young cerebral palsy child are outlined. The needs of such a child in infancy, at the nursery school level, and in kindergarten are considered. For each of these three age levels, evaluation techniques are suggested and the developmental aspects of physical activity, communication, emotional and social adjustment, and mental development are discussed.

973. United Cerebral Palsy of New York City. *Early Education of the Multi-Handicapped Child.* New York City: United Cerebral Palsy Associations, 1971. 35 pp.

In this booklet is briefly described in words and photographs the demonstration program for the "early education of the multi-handicapped child" of United Cerebral Palsy of New York City, Inc. The project is financed by the Office of Education under the Handicapped Children's Early Education Program. The objectives of the project are listed, and the inter-disciplinary staff team is described. Various facets of the program are explained including physical therapy, nutrition, toilet training, etc. Also explained and discussed are means of parental involvement, the goals of the curriculum, the problem of transportation, the phases in the program through which the child progresses, the accomplishments of the project to date, and the plans for the future. Much equipment is pictured, and a floor plan of the facility and a drawing of the "proposed Brooklyn Rehabilitation Campus" are included.

974. Usher, Robert; McLean, Frances; and Scott, Kenneth E.: "Judgment of Fetal Age. II. Clinical Significance of Gestational Age and an Objective Method for Its Assessment," *Pediatric Clinics of North America,* 13:835-848, Aug., 1966. (Series: For I see #555, III see #685.)

"The relation between gestational age, birth weight and disease pattern" was studied in 10,938 consecutive, live-born infants of over 1000 gm. birth weight, and the need to determine gestational age accurately, in order "to distinguish true premature infants who are at high risk from respiratory distress syndrome, from underweight full-term (fetal malnutrition) infants who are prone to hypoglycemia, congenital anomalies and the sequelae of intrauterine asphyxia" etc. was shown. Methods used to assess gestational age are evaluated, and a method, found to be simple and accurate, "is presented by which it is possible to determine whether newborn infants are premature (36 weeks and less), borderline premature (37 to 38 weeks) or full term (39 weeks or more)." Five listed physical features of the neonate that "differentiate during the last month of pregnancy and are unaffected by growth failure" are examined. Results of using the method are reported.

975. U. S. Public Health Service, *Cerebral Palsy,* Washington, D.C.: U.S. Government Printing office, 1967. 11 pp. (PHS Publication No. 1671. Research Profile No. 13.)

The condition of cerebral palsy, its causes, approaches to research,

advances made in research, treatment, and the "outlook" for research are considered.

976. U.S. Public Health Service, *Summary of Progress in Childhood Disorders of the Brain and Nervous System*, Washington, D.C.: U.S. Government Printing Office, 1965. 34 pp. (PHS Publication No. 1370. Research Profile No. 11.)

Divided into three Parts, this booklet contains a review of research sponsored by the National Institute of Neurological Diseases and Blindness. Part I contains a description of the Collaborative Perinatal Research Study, including "useful findings" from the Study; Part II is concerned with research in cerebral palsy; and Part III with research in mental retardation.

977. Vahlquist, B.; Engsner, G.; and Sjogren, Irene: "Malnutrition and Size of the Cerebral Ventricles," *Acta Paediatrics Scandinavica*, 60:533-539, Sept., 1971.

Eighteen children with nutritional marasmus, ages 3.5 to 22 months; 10 children with kwashiorkor, ages 18 to 26 months; and 38 healthy control children, ages 2 weeks to 29 months were examined physically and echoencephalographically to determine the size of the cerebral ventricles. All children were Ethiopian. Methods are described, and results are reported concerning body weight, head circumference, and width of lateral ventricles in relation to age. Echoencephalographic examination of the size of the cerebral ventricles "showed a moderate but significant increase in children with kwashiorkor, examined up to 3-4 weeks after admission, whereas children with marasmus showed no deviation from the normal."

978. Valdes, Orestes S.; Maurer, Harold M.; Shumway, Clare N.; Draper, David A.; and Hossaini, Ali N.: "Controlled Clinical Trial of Phenobarbital and/or Light in Reducing Neonatal Hyperbilirubinemia in a Predominantly Negro Population," *Journal of Pediatrics*, 79:1015-1017, Dec., 1971.

Four treatment groups of predominantly Negro, less than one day old, low birth weight infants were studied. Group 1 received described doses of phenobarbital for five days (23); Group 2 was given continuous phototherapy as described for four days (19); Group 3 was given both phenobarbital and phototherapy (18); and Group 4 was given no therapy (15). Phototherapy was found to be more effective than oral phenobarbital in the lowering of serum bilirubin concentrations in this population of infants, but "the phenobarbital-treated group maintained a significantly lower mean serum bilirubin concentration than the control group on days 3,4, and 5." Combining these treatment methods did not produce better results than phototherapy alone.

979. van den Berg, Bea J., and Yerushalmy, J.: "Studies on Convulsive Disorders in Young Children. I. Incidence of Febrile and Nonfebrile Convulsions by Age and Other Factors," *Pediatric Research*, 3:298-304, July, 1969.

Much data was available on a cohort of 18,500 children born in the Kaiser Foundation Hospital in Oakland, California. "By five years of age, two percent of the 18,500 children had had one or more febrile convulsions; one percent had had nonfebrile convulsions." These children were studied in detail with findings reported with regard to the age at which the first seizure occurred, sex, birth

weight, and gestational age, the incidence of multiple episodes, the incidence of "severe congenital anomalies," and mortality. "Severe congenital anomalies" were present in 31% of the nonfebrile group and in 7% of the febrile group. Of the nonfebrile group 9.7% had cerebral palsy and 15.9% were mentally retarded with 5% of the group having both conditions."

980. van den Berg, Bea J., and Yerushalmy, J.: "The Relationship of the Rate of Intrauterine Growth of Infants of Low Birth Weight to Mortality, Morbidity, and Congenital Anomalies," *Journal of Pediatrics*, 69:531-545, Oct., 1966.

A method is described by which "367 single white low-birth-weight infants in the Child Health and Development Studies in Oakland, California, and 20,408 such infants in New York City" were divided knto four groups which were of identical birth weight and sex composition but were different with respect to length of gestation. The purpose was to provide for study four groups of infants with differing rates of intrauterine growth (IUG). Presented are the results revealed when the four groups were examined and compared concerning mortality rates until two years of age, congenital anomalies, the condition of the infants immediately after birth and in the neonatal period, and their "subsequent health and development." Findings are listed in a "Summary."

981. Van Praagh, Ian G.L., and Tovell, Harold M.M.: "Cesarean Section for Fetal Distress," *Obstetrics and Gynecology*, 31:674-681, May, 1968.

A study was conducted of 192 cases of cesarean section for fetal distress and the 194 offspring with much data presented. Thirty-five of these infants were severely depressed by 1 minute Apgar score, and 18 of these died perinatally. The most significant signs of fetal distress, exclusive of the breech presentation cases, were "the combination of fetal bradycardia and passage of thick meconium." "Prematurity, major congenital defects, amd severe anoxic conditions were the common etiologic factors in the perinatal death group and were conspicuously absent in the large group of mildly depressed and unaffected neonates."

982. Van Praagh, Richard: "Diagnosis of Kernicterus in the Neonatal Period," *Pediatrics*, 28:870-876, Dec., 1961.

Thirty-one infants from a group of 882 infants with hemolytic disease developed kernicterus and were studied "to assess the

accuracy of neonatal neurologic evaluations concerning the presence or absence of kernicterus and,...to ascertain the sources of diagnostic uncertainty and error in the neonatal period.' In the neonatal period kernicterus was firmly diagnosed in 20 of the 31 cases because of marked to moderate spasticity, was suspected in six of the 31 because of mild spasticity, and was not suspected in five cases because no spasticity was observed in the neonatal period. These latter five cases are described as are the three distinct clinical phases seen during the neonatal period and the fourth phase seen after the neonatal period in the infants with kernicterus. Spasticity was found to be a very reliable indicator of kernicterus. "The true absence of any spasticity throughout the first week of life appeared to indicate with great reliability in the neonatal period that kernicterus had not occurred."

983. Vassella, F.: "Organization of Measures for Early Detection and Treatment of Cerebral Palsy in Berne," *Developmental Medicine and Child Neurology*, 8:195-197, Apr., 1966.

Increased education of medical personnel and identification of potential cases of cerebral palsy in obstetrical clinics will aid in the early detection of cerebral palsy. Methods employed at the University of Berne to achieve these two goals are described.

984. Vassella, F., and Karlsson, B.: "Asymmetric Tonic Neck Reflex; A Review of the Literature and a Study of Its Presence in the Neonatal Period," *Developmental Medicine and Child Neurology*, 4:363-369, Aug., 1962.

This reflex and its clinical significance in adults, children, infants, and neonates are bibliographically reviewed. In order to examine "the incidence and consistency of tonic neck reflexes in the newborn period," a study of 108 normal newborns was undertaken. Spontaneous and passively elicited tonic reflex patterns were noted with elicitation methods described. Consistency of the elicitation of the reflex was revealed to be an important factor. True asymmetric tonic neck reflexes were concluded to be rare in the neonatal period. In this sample only nine newborns demonstrated this reflex, and all were considered normal at follow-up.

985. Vehrs, Sidney, and Baum, David: "A Test for Visual Responses in the Newborn," *Developmental Medicine and Child Neurology*, 12:772-774, Dec., 1970.

The simple method used and results obtained when using a bright red flashing light to assess the visual responsiveness in newborn infants is reported. This method proved to be more efficient than use of a bright red ball or diffuse daylight.

986. Vest, M.; Signer, E.; Weisser, K.; and Olafsson, A.: "A Double Blind Study of the Effect of Phenobarbitone on Neonatal Hyperbilirubinemia and Frequency of Exchange Transfusion," *Acta Paediatrica Scandinavica*, 59:681-684, Nov., 1970.

Studied was the effect that phenobarbitone had on serum bilirubin concentration and the frequency of exchange transfusion in newborn infants. Infants admitted to the hospital within 24 hours of delivery because of prematurity or other reasons were randomly assigned to receive either phenobarbitone (56 infants), or a placebo (60 infants). Methods of injection are described. Results showed (1) serum bilirubin levels to be significantly lower in the treated group from the 4th day, and (2) 11 exchange transfusions were needed in the untreated group. This difference was significant statistically. No behavioral effects from the phenobarbitone were detected. Implications are discussed.

987. Von Werssowetz, Odon F., and Parker, Linda: "Flexion Insert for Wheelchairs," *American Journal of Occupational Therapy*, 15:210-211, Sept.-Oct., 1961.

Such an insert, used in the wheelchairs of cerebral palsied children, is pictured and described. This device "gives the child more control of his head and arms by inhibiting the extension pattern and has the additional asset of eliminating supplemental equipment such as straps, crotch posts, braces, etc., usually worn or attached to these children to force them to sit adequately."

988. Vuchovich, D.M.: Haimowitz, Natalia; Bowers, N.D.; Cosbey, June; and Hsia, D. Yi-Yung: "The Influence of Serum Bilirubin Levels Upon the Ultimate Development of Low Birthweight Infants," *Journal of Mental Deficiency Research*, 9:51-60, Mar., 1965.

Sixty-one infants, who weighed 4 1/2 pounds or less at birth and in whom serum bilirubin levels had been determined as neonates, were followed for a four year period. "Each infant was scored for (1) peak bilirubin level, (2) weight at birth, (3) maternal age, (4) developmental examination at four months, (5) developmental examination at one year, (6) Vineland Maturity Scale at three years, (7)

Stanford-Binet at four years, (8) neurological examination at four years, and (9) mental-emotional adaptability at four years." Data on and correlations on the comparison of those children having had peak bilirubin above 18 mg% with those having had peak levels below that point are presented. "It would appear that if the infants survive the neonatal period without gross evidence of kernicterus, the more jaundiced infants behave in much the same manner as those less jaundiced."

989. Wagner, Marsden G.: "Observations on the Newborn Dysmature Infant and His Development during the First 9 Months," *Journal of Pediatrics*, 63:335-338, Aug., 1963.

Preliminary results from a study of dysmature infants are presented. Tables present data on the mothers of eight dysmatures and on the infants' conditions at birth, neurologic test results at age 24 hours, physical examination at 9 months, and the uncorrected and gestationally corrected developmental test quotients. "Modifications of methodology" needed to aid in the study of such infants are discussed.

990. Wagner, Marsden G., and Arndt, Rolf: "Postmaturity as an Etiological Factor in 124 Cases of Neurologically Handicapped Children," in *Studies in Infancy*, based on a study group held at Oxford, September, 1966, edited by Ronald MacKeith and Martin Bax. London: Spastic International Medical Publication in association with Heinemann Medical Books, 1968. pp. 89-93. (Clinics in Developmental Medicine, No. 27.)

A study was conducted on 124 patients at the School for Cerebral Palsied Children of Southern California to investigate the frequency of extended pregnancies among children with cerebral palsy and "generalized neurological deficiency." The incidence of postmaturity clearly exceeded the natural incidence. The authors emphasize the need for greater consideration of postmaturity as a factor in producing neurologically handicapped infants, urge that a more thorough study be conducted, and suggest usage of the preventive measure of labor induction should further studies yield the same results.

991. Walker, James: "Obstetric Viewpoint on Cerebral Palsy," *Cerebral Palsy Bulletin*, 2:61-67, 1960.

The role of the obstetrician in the study of pregnancy wastage is discussed. Individually described are the etiological factors in cerebral palsy that occur during pregnancy and labor. The importance of "clinical obstetrical documentation" in cerebral palsy and reasons why it is often lacking are considered. Also listed are steps the obstetrician can take to improve his position concerning cerebral palsy.

992. Walker, W.: "Role of Liquor Examination," *British Medical Journal*, 2:220-223, Apr. 25, 1970.

Various techniques used in the examination of liquor for bilirubin in cases of pregnancy complicated by Rh isoimmunization are explained.

993. Walker, W., and Ellis, M.I.: "Intrauterine Transfusion," *British Medical Journal*, 2:223-228, Apr. 25, 1970.

Techniques, dangers, and results of administering intrauterine transfusions in several series of patients are reported. Conclusions concerning the "place of intrauterine transfusion" are presented.

994. Walker, W.; Fairweather, D.V.I.; and Jones, P.: "Examination of Liquor Amnii as a Method of Predicting Severity of Haemolytic Disease of Newborn," *British Medical Journal*, 2:141-147, July 18, 1964.

Hemoglobin, bilirubin, and protein levels were estimated in liquor amnii specimens obtained from 277 immunized Rh-negative women during the 34-36th weeks of gestation in order to predict the severity of hemolytic disease of the newborn and to provide evidence that early labor induction might be indicated. The amount of bilirubin in the specimens as estimated in "units" was thought to be the best predictor of the severity of the disease. Twenty per cent of the specimens contained 10 or more units, 40% of these cases resulted in stillbirth or very severe disease. However, stillbirth and very severe disease was also present in cases having lower levels and even in some cases having clear specimens. Protein and hemoglobin levels and their significance are also reported, and results are discussed. It was concluded that this examination method will predict severity of the disease and stillbirth "in at best 50% of cases," but the examination is warranted in cases where premature labor induction is being considered.

995. Wall, Richard L.; Umlaud, Harry J., Jr.; and Geppert, Leo J.: "Muscle Reflex Patterns in Infancy and Childhood: Normal Patterns and Patterns in Thyroid Disorders, Cerebral Palsy, and Meningopathies," *Journal of Pediatrics*, 64:701-710, May, 1964.

Earlier efforts to measure such patterns are described, and the kineomometer is explained as an instrument capable of recording "the speed, direction, and pattern of muscle reflexes." The technique used and the results whereby the "normal mean values, standard deviations and confidence limits" were established on 3,100 infants

and children are presented. Also described are the reflex patterns seen in children with hypo- and hyperthyroidism, mongolism, cerebral palsy, and meningitis. It is believed that the kinemometer may be a very important aid in the early diagnosis of cerebral palsy.

996. Wallace, Helen M.: "Day Care for Handicapped Children," *Young Children*, 21:151-161, Jan., 1966.

Twelve day care services for handicapped children in the East Bay Area of California were visited. Described are the sponsorship of the services, the fees charged, the supervision of the services, licensing, the operational frequency, the enrollment policies, the age range of children served, the staffs, etc. Also considered in detail is "the health program for the children." The benefits given the children as viewed by the staffs and suggestions for improvement made by the staffs are described. It is concluded that standards must be established for day care centers for handicapped children and that "an interdisciplinary consulting service" should be provided. Suggestions concerning standards are made.

997. Wallace, Sheila J., and Hichie, Eileen A.: "A Follow-Up Study of Infants Born to Mothers with Low Oestriol Excretion during Pregnancy," *Lancet*, 2:560-563, Sept. 10, 1966.

Fourteen infants of mothers who "had very low oestriol excretion in the last trimester of pregnancy" were studied between the ages of 13 and 24 months. Neonatal data on the infants is presented. Upon examination eight were found to be normal and six had various described neurological and psychological deficits.

998. Waltman, Richard; Bonura, Frank; Nigrin, Gabriel; and Pinat, C.: "Ethanol in Prevention of Hyperbilirubinaemia in the Newborn; A Controlled Trial," *Lancet*, 2:1265-1267, Dec. 13, 1969.

The administration of between 100-115 g. of ethanol before delivery to 26 pregnant women resulted in their newborns having significantly reduced serum bilirubin levels at age 3, 4, and 5 days as compared to 18 control infants. "The findings suggest a simple, safe, and expedient agent which may be used to prevent raised levels of bilirubin in the newborn--levels which may affect mental and motor development in the first year of the infant's life."

999. Walton, J.N.; Ellis, E.; and Court, S.D.M.: "Clumsy Children: Developmental Apraxia and Agnosia," *Brain*, 85:603-612, 1962.

Case histories of five clumsy children, observed over a five year period, are presented, and comment is made on each case. The principle features of this "syndrome of clumsiness due to developmental apraxia and agnosia, diagnostic factors, and educational aspects are considered.

1000. Walton, John N.: "The 'Floppy' Infant," *Cerebral Palsy Bulletin*, 2:10-18, 1960.

The confusion and difficulties involved in the concepts concerning the hypotonic infant are described. The author feels that the causes of infantile hypotonia are of three types: "(1) Infantile spinal muscular atrophy. (2) Symptomatic hypotonia. (3) Benign congenital hypotonia." These are individually described and aids to differential diagnosis are considered.

1001. Warrner, Richard A., and Cornblath, Marvin: "Infants of Gestational Diabetic Mothers," *American Journal of Diseases of Children*, 117:678-683, June, 1969.

Thirty-one infants of gestational diabetic mothers (IGDM) were clinically compared with 19 infants of insulin dependent diabetic mothers (IDM) with respect to maternal history, birth weight, Apgar score, hypoglycemia, jaundice, respiratory distress syndrome, congenital malformations, and mortality. Laboratory findings are also reported. The primary finding was that although the above complications occurred in both groups of infants, they occurred less frequently in the IGDM group.

1002. Wasz-Hockert, O.; Koivisto, M.; Vuorenkoski, V.; Partanen, T.J.; and Lind, J.: "Spectrographic Analysis of Pain Cry in Hyperbilirubinemia," *Biology of the Neonate*, 17:260-271, 1971.

Spectrographically recorded, analyzed, and compared to normal crys were the pain cries of 45 neonates with hyperbilirubinemia: "15 cases with Rh immunization (Group 1),

15 cases with ABO immunization (Group II), and 15 cases of hyperbilirubinemia where no blood group incompatibility could be demonstrated (Group III)." Methods and data are presented with several spectrographic recordings illustrated. Several differences were noted between the hyperbilirubinemic cry and the normal cry. "Apart of the high pitch and short duration of the cry signal in most of the cases, a very specific type of cry phonation, furcation, was found in 10 of the Rh-, 6 of the ABO immunization, and in only 2 of the hyperbilirubinemia cases without blood group incompatibility. The significance of furcation in the hyperbilirubinemic cry as an early sign of developing brain involvement is discussed."

1003. Waters, William J.: "The Reserve Albumin Binding Capacity as a Criterion for Exchange Transfusion," *Journal of Pediatrics*, 70:185-192, Feb., 1967.

Studied was the relationship between neurological damage and the factors of serum bilirubin concentration and reserve albumin binding capacity in neonates with hyperbilirubinemia. The methods of measurement, the patients, and the results are described. Brain damage was found to be associated with serum bilirubin concentrations above 20 mg./100 ml and reserve albumin binding capacities of less than 50 mg./milliter serum. However of the 120 infants who had no apparent brain damage and a binding capacity greater than 50 mg., 68 had maximum bilirubin concentrations above 20 mg./100 ml. Thus, "the reserve albumin binding capacity is a more selective indicator of the risk of brain damage than the serum bilirubin concentration, particularly when the latter is in the 20 to 25 mg. per 100 ml. range." Also discussed is the relevence of these results to the conditions under which exchange transfusions should be administered.

1004. Watney, P.J.M.; Hallum, J.; and Scott, P.: "The Relative Usefulness of Methods of Assessing Placental Function," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 77:301-311, Apr., 1970.

Measurement of estriol excretion, measurement of serum heat-stable alkaline phosphatase, and vaginal cytology were compared as three methods of assessing placental function in 180 patients at risk, as defined. Methods used and results obtained, regarding each method, when the

patients were divided into five groups on the basis of "the size of the baby in relation to the period of gestation" are described. Each method is discussed. "Serial urinary oestriol examination was found to be the most useful and practical for routine use."

1005. Weingold, A.B., and Southern, A.L.: "Diamine Oxidase as an Index of the Fetoplacental Unit; Clinical Applications," *Obstetrics and Gynecology*, 32:593-606, Nov., 1968.

Serial plasma diamine oxidase (DAO) titers were measured during normal and complicated pregnancies. A falling or persistently low level of plasma DAO during early pregnancy frequently resulted in abortion, but a number of these pregnancies continued to be successful deliveries. It is theorized that such pregnancies involve fetuses developing in stress environments where permanent damage may result. Work done by the Collaborative Project in Cerebral Palsy supporting this assumption is mentioned. It is concluded that plasma DAO determination may be of value in identifying a high-risk group during intrauterine existence and may also be a means of delineating the infant who will require thorough postnatal observation.

1006. Weingold, Allan B.: "Monitoring the Fetal Environment. 1. Biochemical Methods," *Postgraduate Medicine*, 48:232-238, Sept., 1970. (Series: For II see #1007, III see #1008.)

"Many biochemical, endocrine and biophysical procedures are being used to monitor the fetal environment, the objective being development of a battery of tests for subclinical fetal distress applicable throughout the antepartum course." Enzymatic and nonenzymatic biochemical indexes of the fetal environment are considered in this part of the article. Three enzymes are discussed with regard to their production in normal pregnancy and alterations in this production which may occur in the presence of pregnancy complications. These three are diamine oxidase, alkaline phosphatase, and oxytocinase. Folic acid and serum copper are discussed as two nonenzymatic biochemical indexes.

1007. Weingold, Allan B.: "Monitoring the Fetal Environment. 2. Endocrine and Biophysical Methods," *Postgraduate Medicine*, 48:201-207, Oct., 1970. (Series: For I see #1006, III see #1008.)

Chorionic gonadotropin, pregnanediol, and estriol are individually considered concerning their value as endocrine indexes of the fetal environment. Also discussed are the value of "the colpocytogram in the diagnosis of threatened abortion" and human placental lactogen. With regard to biophysical indexes of fetal status, the uses and values of ultrasonography, amniography, and amnioscopy are described. The technique of ultrasonography "provides, for the first time, a reproducible physical assessment of intrauterine growth which may be correlated with many of the biochemical and endocrine techniques of assessing the physiologic status of the fetus."

1008. Weingold, Allan B.: "Monitoring the Fetal Environment. 3. Selective Application during Labor," *Postgraduate Medicine*, 48:251-256, Nov., 1970. (Series: For I see #1006, II see #1007.)

A number of methods developed to determine fetal maturity are briefly discussed including three tests made of amniotic fluid and ultrasonic measurement. Intrapartum monitoring is considered to be mandatory for all "patients with clinical complications in whom evidence of compromise of the fetal environment has been obtained by one or more of the technics used in antepartum monitoring." Intrapartum monitoring is described with regard to the biophysical techniques of phonocardiography, ultrasonography (Doppler effect), and electrocardiotachometry, and the biochemical technique of fetal scalp blood sampling.

1009. Weingold, Allan B., ed.: "Symposium on Evaluation of Fetal Environment." *Clinical Obstetrics and Gynecology*, 11:1065-1205, Dec., 1968.

The titles of papers written for this symposium and contained on these pages are "Identification of the High Risk Fetus," "Enzymatic Indices of Fetal Environment," "Endocrine Indices of Fetal Environment," "Hormonal Cytology of Pregnancy," "Effects on the Fetus of Folic Acid Deficiency in Pregnancy," "Ultrasonic Fetal Monitoring," "Placental Gas Transfer," and "Biochemical Indices of Fetal Condition." All of these indices of fetal condition may be aids in the prevention of perinatal mortality and morbidity.

1010. Weiss, Andrew E., and Schmidt, Rosemary E.: "Developmental Evaluation and Therapy Program; Functional Approach to Developmental Delays in Infant Behavior," *Clinical Pediatrics*, 9:570-572, Oct., 1970.

The importance of the early diagnosis of developmental delay in regard to successful treatment is stated. The Maturation Assessment and Therapy (MAT) program is described as a method to aid in such diagnosis and treatment. It is especially designed to distinguish delayed development caused by "lack of environmental stimulation" from that "resulting from organic disorders." Assessment and therapeutic methods of the program are explained with the multidisciplinary approach being emphasized.

1011. Weiss, Jess B.; Kagey, Karen S.; and Frink, Richard D.: "Fetal Heart Rate Monitoring in Clinical Practice," *Obstetrics and Gynecology*, 35:297-299, Feb., 1970.

A system of monitoring fetal electrocardiographic activity is presented that may be used to record fetal heart rate continuously during labor and that includes "electrodes placed upon the skin of the mother's abdomen."

1012. Weller, Thomas H., and Hanshaw, James B.: "Virologic and Clinical Observations on Cytomegalic Inclusion Disease," *New England Journal of Medicine*, 266:1233-1244, June 14, 1962.

Several "problems influencing investigations" of cytomegalic inclusion disease are discussed. Seventeen patients having the condition in infancy were studied for from 11 months to 4 years. The technique of isolating the virus from urine was used with these patients, and results are presented in detail as are clinical observations of the children. "One patient in the series died during the third year of life; the remaining 16 are alive, and of these only two are free of evidence of residual damage. Mental retardation is present in 13, and motor disability in 12 of the survivors; three have already been institutionalized."

1013. Wennberg, Richard P.: "Phototherapy and the Jaundiced Infant," *Northwest Medicine*, 69:241-243, April, 1970.

Data from five "controlled studies of phototherapy in hyperbilirubinemia of prematurity" are summarized as are "possible hazards of phototherapy." Three possible hazards are discussed and are concluded to be "probably very small compared to the known hazards of hyperbilirubinemia in the premature infant." Also considered are two possible "hazards of prophylactic phototherapy." Guidelines for the selection of infants to be treated with phototherapy are presented.

1014. Westin, Bjorn: "Infant Resuscitation and Prevention of Mental Retardation," *American Journal of Obstetrics and Gynecology*, 110:1134-1138, Aug. 15, 1971.

The use of positive-pressure ventilation and cardiac massage in infant resuscitation is discussed, and the "infusion of base" is compared to the "transfusion with oxygenated blood" with the latter method preferred. The use of hypothermia and pertinent studies on the subject are then reviewed. "When severely asphyxiated infants were exposed to cold, there was an almost immediate increase in heart rate and Apgar scores and breathing began, after a brief interval (in most cases). Follow-up studies on the cooled infant 10 years later showed normal development."

1015. Westin, Bjorn; Nyberg, Rune; Miller, James A., Jr.: Wedenberg, Erik: *Hypothermia and Transfusion with Oxygenated Blood in the Treatment of Asphyxia Neonatorum.* Uppsala, Sweden: Almquist and Wiksells Boktrycker; AB, 1962. 80 pp. (Acta Paediatrics Supplement, 139, Vol. 51.)

The need for improvement in the methods used to treat neonatal asphyxia in order to reduce infant mortality and the occurrence of brain damage is stated in the "Introduction" to this monograph. The authors then describe two possible methods of treatment--hypothermia and transfusions with oxygenated blood. In Chapters III to VIII a study is presented in detail in which 10 newborn infants with severe asphyxia were treated with hypothermia alone and in combination with transfusion of oxygenated blood. Other resuscitative methods had been tried without success in these cases before the two methods under study were administered. In Chapter IV results of various follow-up examinations and tests are reported. In the surviving nine infants, "no deviations from normal were seen." Results are discussed and conclusions presented in Chapter IX. A bibliography follows.

1016. Wharton, B.A., and Bower, B.D.: "Immediate or Later Feeding for Premature Babies? A Controlled Trial," *Lancet*, 2:969-972, Nov. 13, 1965.

One hundred and eighteen premature babies, fed "large volumes of milk" soon after birth were compared with 121 prematures who were fed less and whose initial feeding was delayed until at least 12 hours of age. Procedures are described. Mortality was much higher in the immediately fed group with no other explanation than the method of feeding detected. Incidence of hypoglycemia and hyperbilirubinemia was reduced in the immediately fed group, and this group regained birth weight earlier. It is concluded that the method is "not without danger," and "modifications of the immediate-feeding regimen are suggested."

1017. Wigglesworth, J.S.: "Disorders of Fetal Growth," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 75:1234-1236, Dec., 1968.

The term "small-for-dates baby" is defined and problems occurring with such infants are discussed. The effects of maternal nutrition and maternal-fetal transfer, the appearance of the small-for-dates baby, and the increased risks these infants face "both during and after delivery" are considered. The importance of the timing of the malnutrition to the impairments resulting is mentioned.

1018. Wigglesworth, J.S.: "Foetal Growth Retardation," *British Medical Bulletin*, 22:13-15, 1966.

Reviewed in this article are the factors controlling fetal growth, the clinical characteristics of small-for-dates babies, pathological features of these infants, causative factors, and resulting handicaps. Numerous studies are cited.

1019. Wigglesworth, J.S.: "Malnutrition and Brain Development," *Developmental Medicine and Child Neurology*, 11:792-794, Dec., 1969.

This "annotation" surveys the literature on the effects of malnutrition on brain development. The work of Myron Winick is emphasized.

1020. Willner, Milton M.: "Maturational Deficiencies of the Fetus and Newborn: Relationships to Drug Effects," *Clinical Pediatrics*, 4:3-12, Jan., 1965.

In this article are reviewed the relationships between "foreign substances such as drugs" in the fetus and newborn and "handicaps and deficiencies of the newborn." These handicaps are divided into the anatomic and the physiologic and explained. The enzyme deficiencies seen in the fetus and newborn in the CNS, the liver, the gastrointestinal system, the kidneys, and the blood are described, and the clinical effects of drugs on these systems are considered. Many related studies are mentioned.

1021. Willocks, James; Donald, Ian; Campbell, Stuart; and, Dunsmore, I.R.: "Intrauterine Growth Assessed by Ultrasonic Foetal Cephalometry," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 74:639-647, Oct., 1967.

The biparietal diameter of the fetus in utero was serially measured in 108 cases by using ultrasonic cephalometry. The infants were suspected of being dysmature or of suffering from placental insufficiency. The average number of measurements for each case was 4.2. The results of comparing the growth rate of the biparietal diameter with the birth weight and gestational age of the infants are presented with "comments and criticisms" listed. Also listed are the "cases suitable for this type of investigation." The method is termed "a useful aid in the assessment of cases of suspected dysmaturity."

1022. Willocks, James; Donald, Ian; Duggan, T.C.; and Day, N.: "Foetal Cephalometry by Ultrasound," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 71:11-20, Feb., 1964.

Work in this area is reviewed, and the two primary reasons for using cephalometry are stated as being "to assess disproportion" and "to assess the growth and maturity of the foetus." The principle of the method developed by the authors, the technique, the process by which it was developed, and the results which have been obtained are described. Ultrasonic echo sounding is used to measure the biparietal diameter of the fetus in utero. It is concluded to be a simple and safe method which can be frequently repeated without danger with the results available immediately.

1023. Willoughby, H.W.; Desjardins, P.D.; Power, R.M.H., Jr.; and Lee, T.K.: "Hyperbilirubinemia in Late Pregnancy and Its Correlation with Meconium Staining," *American Journal of Obstetrics and Gynecology*, 109:383-388, Feb. 1, 1971.

Two studies, undertaken to determine "the importance of hyperbilirubinemia in the last trimester of pregnancy as a prognostic sign," are presented. When blood samples were obtained in late pregnancy from 1,018 women, the incidence of hyperbilirubinemia was found to be 10.5%. The condition was correlated with ethnic group, obstetrical complications, meconium staining, fetal distress, neonatal morbidity, and perinatal death. Results are presented in tables. On the basis of the data, it is recommended that all pregnant women be given routine blood tests for hyperbilirubinemia in late pregnancy, and that all pregnant women having the condition be "considered pregnancies at risk."

1024. Willson, M. Ann: "Use of a Developmental Inventory as a Chart of Progress," *Physical Therapy*, 49:19-32, Jan., 1969.

There is a need for physical therapists to have a knowledge of developmental patterns because of the earlier diagnosis being made of congenital disorders and the emphasis on early physical therapy to prevent deformities, etc.. Numerous developmental tests or adaptations of such tests used by physical therapists are reviewed with disadvantages frequently mentioned. "The Inventory of Development" is presented and described in detail with respect to item selection, "comparison with other developmental tests," scoring method, and administration. The Inventory is designed to be "a chart of progress" to be used during the physical therapy process. The results of each child's assessment is graphically represented. In close resemblance to the divisions of Gesell, four basic areas of development are assessed from birth to approximately school age: Gross Motor, Fine Motor, Communication, and Personal-Social.

1025. Wilson, Arthur L.: "Group Therapy for Parents of Handicapped Children," *Rehabilitation Literature*, 32:11:332-335, Nov., 1971.

The initiation and the structure of a program consisting of eight group therapy sessions for parents of handicapped children is described. The topics discussed in the sessions are listed, and the areas found to be of special interest and concern to these parents are discussed. Emphasized are the details which led to the success of the program, including the role of the leader, the physical setting of the sessions, the care of the children while the parents were in attendance, etc. Also considered are the factors that motivated the parents to attend the sessions.

1026. Wilson, B.D.R., and Allen, Dorothy: "Splints in the Treatment of Cerebral Palsy," *Physiotherapy*, 48:41-44, Feb. 10, 1962.

Splints are divided into two types: 1) the "all-round plaster of Paris splint" used "to gain range by continuously, over a period(s) of weeks, inhibiting and thus decreasing spasticity" and 2) the "removable splints" used "to control abnormal patterns of movement, and so improve function." In this second type, "the patient must have range of movement." The techniques, follow-up treatment, etc. of the first type used below the knee and for the hand are presented. Splints of the second type that are described include those for the foot and hand, the leg abduction plaster, the halo splint, and special shoes. The value of splintage in the early treatment of cerebral palsy is mentioned,

1027. Wilson, J.: "Chronic Paediatric Neurological Disroders. Part I." *British Medical Journal*, 4:152-154, Oct. 18, 1969. (Series: For II see #1028.)

With emphasis on the role of the family doctor, this article is concerned with the community care and the co-ordination of services for children having neurological disorders. Cerebral palsy is the principle disorder discussed with early diagnosis and management stressed. The problems of the cerebral palsied adolescent are mentioned, and epilepsy is briefly considered.

1028. Wilson, J.: "Chronic Paediatric Neurological Disorders. Part II." *British Medical Journal*, 4:211-213, Oct. 25, 1969. (Series: For I see #1027.)

After a consideration of progressive neurological disorders, various secondary medical problems that occur in neurologically handicapped children are discussed. These include teething difficulties, dribbling, immunization difficulties, and dyschezia. Also of concern in this article are the psychiatric and social problems of the child with a neurological disorder, family stress, and adolescence.

1029. Wilson, John T.: "Caution with Phenobarbital," *Clinical Pediatrics*, 10:684-687, Dec., 1971.

"What is known concerning the potential harmful effects of phenobarbital" for the treatment of neonatal hyperbilirubinemia is reviewed. Numerous studies are cited.

1030. Wilson, Miriam G.; Parmelee, Arthur H., Jr.; and Huggins, Muriel H.: "Prenatal History of Infants with Birth Weights of 1,500 Grams or Less," *Journal of Pediatrics*, 63:1140-1150, Dec., 1963.

Seventy-nine infants having birth weights of from 501 to 1,500 grams were compared on 22 variables, using "multiple regression and single variable analysis computer programs," with 216 infants having birth weights of from 1,501 to 2,500 grams and 134 infants having birth weights over 2,500 grams. The methods and the variables are explained in the Appendices. A principle finding was a correlation between the group having the lowest birth weights and abnormal reproductive history. "Prevention of births of infants with very low weights in this and similar populations is most profitably directed at study of primary reproductive failure, abnormalities of implantation, toxemia, and pyelonephritis."

1031. Windle, William F.: "Brain Damage at Birth; Functional and Structural Modifications with Time," *Journal of the American Medical Association*, 206:1967-1972, Nov. 25, 1968.

Results of Dr. Windle's work on asphyxiated monkeys are reported and related to the findings of the Collaborative Perinatal Program of the NINDB. Presented in detail are the results of studying "the symptomatic and

neuropathologic modification of asphyxial brain damage" with time in 16 asphyxiated monkeys. Although physical and behavioral deficits improved with time and no planned therapy, histological examination of the brains of these monkeys, after living from three to nine years, revealed "progressive deterioration of brain structure." These findings are discussed in relation to the findings of the Collaborative Perinatal Study that most of the infants having neurological deficits at one year did not have them at age four years. Dr. Windle concludes, "I do not doubt that they, too, are full of lesions." The value of "intensive physical exercise regimens" for treating the cerebral palsied is questioned on the basis of the results with the primates.

1032. Windle, William F.: "Brain Damage by Asphyxia at Birth," *Scientific American*, 222:76-84, Oct., 1969.

Asphyxia is defined, and the condition of asphyxia neonatorum and its debated role in brain damage are discussed. The experiments by the author and his colleagues involving the asphyxiation of rhesus monkeys are presented. While monkeys asphyxiated for a shorter time at birth showed abnormal neurological signs which disappeared relatively quickly, "all the mokeys that had been asphyxiated during birth for more than 12 minutes and had to be resuscitated exhibited functional deficits that persisted for some time." "The most seriously injured animals presented symptoms resembling those encountered in human beings with cerebral palsy." Other factors, such as premature birth, postnatal respiratory distress, kernicterus, etc., were found to sometimes increase "the amount of brain damage and the extent of functional loss" when they occurred with asphyxia neonatorum. Findings involving these various "complicating factors" are presented and discussed. The gradual disappearance of neurological deficits and the abnormal brain section findings, including "secondary brain damage" in the 17 monkeys studied over a long period of time are described. These findings on monkeys are then related to findings on human infants from the Collaborative Perinatal Research Program.

1033. Windle, William F.: "Effects of Asphyxiation of the Fetus and the Newborn Infant," *Pediatrics*, 26:565-569, Oct., 1960.

The poor quality of existing studies on the subject is described, and the value of utilizing animals in such studies is discussed. Areas of confusion and misconception are considered as are the biochemical and behavioral changes that occur in the presence of asphyxia. Five criteria necessary for the "successful clinical evaluation of relationship between asphyxiation and anoxia in the birth process and mental retardation in the offspring" are listed.

1034. Windle, William F.: "An Experimental Approach to Prevention or Reduction of the Brain Damage of Birth Asphyxia," *Developmental Medicine and Child Neurology*, 8:129-140, Apr., 1966.

The results of experiments when asphyxia was induced in 132 fetal monkeys are reported. Asphyxiation for a period of more than 7 minutes resulted in brain damage in all cases. The neuropathology of the monkeys and the clinical course of those having cerebral palsy are discussed. A review is conducted of previous studies concerned with the prevention and treatment of asphyxia neonatorum. Dr. Windle concludes that at present (1966) the only effective therapeutic technique is the infusion of alkali and glucose. This treatment may be an important factor in preventing cerebral palsy.

1035. Winick, Myron: "Cellular Growth during Early Malnutrition," *Pediatrics*, 47:969-978, June, 1971.

The experimental studies conducted in this area by others and by the author are reviewed. The effects of both post- and prenatal malnutrition on cellular growth are considered.

1036. Winick, Myron: "Cellular Growth of Human Placenta, III. Intrauterine Growth Failure," *Journal of Pediatrics*, 71:390-395, Sept., 1967.

The elements of total weight, desoxyribose nucleic acid (DNA), ribonucleic acid (RNA), and protein content were assessed in the placentas from 25 infants with intrauterine growth failure. Severe malformations were detected in eight of these infants, and their placentas

were found to be normal with regard to the examination criteria. In the other 17 infants no physical defect other than small size was determined, but the placentas were found to weigh less proportionately to contain less protein and DNA, and to contain an increased RNA content. "Thus protein/DNA was normal whereas the RNA/DNA ratio was elevated." Results are discussed, and "it is suggested that this increased ratio may be a manifestation of placental insufficiency."

1037. Winick, Myron: "Comprehensive Approach to a Child with a Birth Defect," *Bulletin of the New York Academy of Medicine*, 43:819-828, Sept., 1967.

"The comprehensive approach to a child with a birth defect involves numerous facets: 1) the family must be supported; 2) the child must be medically rehabilitated, properly educated, taught to enjoy his leisure time, and placed in a rewarding and productive vocation; 3) society must be prepared to accept more and more children and adults with congenital malformations." Aspects of these factors are discussed.

1038. Winick, Myron: "Fetal Malnutrition and Growth Processes," *Hospital Practice*, May, 1970.

Reporting on his own studies as well as those of others, Dr. Winick concludes that cellular growth is not a homogeneous process, but rather one in which the organ moves from a stage where growth is primarily due to cell division to a stage where growth is by increase in cellular size. Findings from studies conducted on rats and humans show that timing is the critical factor in determining the outcome of fetal and early postnatal malnutrition. Undernutrition during the first stage of cellular growth can result in a permanent reduction in cell number. The brain, completing its growth first among body organs, suffers a high risk from fetal malnutrition.

1039. Winick, Myron: "Malnutrition and Brain Development," *Journal of Pediatrics*, 74:667-679, May, 1969.

In this review article numerous studies concerned with this subject are examined and interpreted. The studies are of two types, "those dealing with physical and chemical brain growth and maturation and those dealing with the development of brain function, i.e., neurologic, psychomotor, and intellectual development." Two important factors revealed by these studies are that malnutrition is "a self-perpetuating problem" in families and in populations, and that the timing of the malnutrition is of critical importance. Possible preventive or corrective measures are briefly discussed.

1040. Winick, Myron, and Rosso, Pedro: "The Effect of Severe Early Malnutrition on Cellular Growth of Human Brain," *Pediatric Research*, 3:181-184, Mar., 1969.

Brains were studied as described and compared in 10 children in Santiago, Chile who died accidently or from poisoning and who "were well nourished and were within the normal height and weight curves for both Chilean and American children" and in nine infants in Santiago, Chile who died before age 1 year from severe malnutrition. The brains in the latter group "all showed reduced weights and reduced quantities of protein, RNA, and DNA content." "The data also suggest that the younger the child when malnutrition strikes, the more marked the effects."

1041. Winick, Myron, and Rosso, Pedro: "Head Circumference and Cellular Growth of the Brain in Normal-Marasmic Children," *Journal of Pediatrics*, 74:774-778, May, 1969.

Studied was the correlation between the cellular growth of the brain and head circumference in normal and malnourished children who had died "during the first year of life." The results of comparisons in both groups of children were presented. The head circumferences of the marasmic children were all "more than two standard deviations below the mean for normal children of the same age" with brain weight and protein also reduced proportionally. "DNA content (cell number) was reduced as much as, and in three cases more than, head circumference." It is concluded that measurement of head circumference is a valid means of assessing "postnatal brain growth in normal and malnourished infants."

1042. Winick, Myron; Rosso, Pedro; and Waterlow, John: "Cellular Growth of Cerebrum, Cerebellum, and Brain Stem in Normal and Marasmic Children," *Experimental Neurology*, 26:393-400, Feb., 1970.

Brains were examined and compared as described from 12 well nourished children who died as a result of accidents, etc. and from 16 marasmic, severely malnourished children who died before age two years. Results are reported concerning the patterns of cellular growth in the cerebrum, cerebellum, and brain stem and weight wet and dry, protein, RNA, and DNA content values. "These data demonstrate that malnutrition early in life will retard the rate of cell division and reduce the ultimate number of cells in human cerebrum, cerebellum, and brain stem. The data from this study reveal different regional growth patterns and different regional effects of malnutrition in human brain than those which have been previously reported in rat brain. These differences have raised some questions as to the suitability of the rat as a model for studying the effects of malnutrition on cellular growth."

1043. Wishingrad, Lester; Cornblath, Marvin; Takakuwa, Toshio; Rosenfeld, Irving M.; Elegant, Lawrence D.; Kaufman, Avner; Rosers, Elizabeth; and Klein, Reuben I.: "Studies of Non-Hemolytic Hyperbilirubinemia in Premature Infants. I. Prospective Randomized Selection for Exchange Transfusion with Observations on the Levels of Serum Bilirubin with and without Exchange Transfusion and Neurologic Evaluations One Year After Birth," *Pediatrics*, 36:162-172, Aug., 1965.

Compared were 50 premature neonates with non-hemolytic hyperbilirubinemia, who received exchange transfusions, and 50 who did not. Eighty-seven infants acted as controls. Methods used, data on the subjects, and results concerning the course of the non-hemolytic hyperbilirubinemia birth weight relationships, the development of kernicterus, mortality, neurological sequelae, etc., are described. The children were neurologically examined at discharge, at age six months, and at age one year with no significant difference observed among the three groups. It was concluded "that exchange transfusions in the management of non-hemolytic hyperbilirubinemia of the premature not associated with clinical factors which may enhance the development of kernicterus such as asphyxia, hypoproteinemia, sepsis, etc., need not be performed for unconjugated bilirubin values under 24 mg/100 ml."

1044. Wolf, James A., comp. and ed. *The Results of Treatment in Cerebral Palsy.* Springfield, Illinois: Charles C. Thomas, 1969. 327 pp.

This book brings together noteworthy articles relating to the physical treatment in cerebral palsy. Some of the individual articles are annotated elsewhere in this bibliography. Part One of the volume is concerned with the historical background of cerebral palsy. Various systems of treatment which have been developed are outlined. Part Two consists of reprints of articles by physical therapists which describe fundamental principles to be considered in evaluation and assessment of children with cerebral palsy. Articles on the results of treatment are contained in Part Three, and several developmental and assessment scales are presented in Part Four.

1045. Wolf, James M., and Anderson, Robert M., comps. and eds. *The Multiply Handicapped Child.* Springfield, Illinois: C. C. Thomas, 1969. 468 pp.

Numerous papers, many reprinted from journals, by outstanding authors in the several fields concerned with the handicapped child are contained in this book. The seven papers in Part One introduce the reader to the medical and educational challenge presented by the multiply handicapped child. Reports on investigations into the incidence and the prevalence make up Part Two. Education is the topic of concern of the eight papers in Part Three, and evaluation is the general topic of the five papers comprising Part Four. "A Theoretical Framework for the Multiply Handicapped Child" is the title of Part Five. Over 50 pages of fully cited references follow the text.

1046. Wolf, James M., comp., Temple Fay: *Progenitor of the Doman-Delacato Treatment Procedures.* Springfield, Illinois: Charles C. Thomas, 1958. 258 pp.

This volume is a compilation of nineteen articles, including many on cerebral palsy, written by Temple Fay. Rehabilitation is emphasized.

1047. Wolf, Steven L.: "Contralateral Upper Extremity Cooling from a Specific Cold Stimulus," *Physical Therapy,* 51:158-165, Feb., 1971.

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1047. Wolf, Steven L.: "Contralateral Upper Extremity Cooling from a Specific Cold Stimulus," *Physical Therapy,* 51:158-165, Feb., 1971.

An investigation involving ten normal subjects is described in which the hypothesis that "application of cold to the unaffected or contralateral limb may provide a means of cooling to the affected extremity" was tested. Methods used and results supportive of the hypothesis are presented. It is suggested that this method may be effective in the alleviation of spasticity "while providing the patient with limited physical and psychic discomfort." Possible mechanisms involved in the contralateral cooling are discussed.

1048. Wolff, Peter H.: "The Serial Organization of Sucking in the Young Infant," *Pediatrics*, 42:943-956, Dec., 1968.

This report describes the two distinct sucking rhythms found in normal newborn infants. One of these, the non-nutritive sucking pattern, was found to be significantly different in infants with a history of perinatal distress but who showed no definite neurological signs. Infants with definite brain damage may or may not have deranged patterns of non-nutritive sucking depending on the nature and the severity of the disease. The sucking patterns found in Down's syndrome, perinatal anoxia, hyperbilirubinemia, dysmaturity, neonatal seizures, and metabolic disorders are described. The predictive significance of sucking rhythm abnormalities for later development has not been established.

1049. Wolinsky, Gloria: "Current Status and Future Needs in Research on the Orthopedically Handicapped Child," *Rehabilitation Literature*, 31:290-296, Oct., 1970.

The following three factors are discussed "in terms of their influence on current and future trends in research as it concerns the education of the orthopedically handicapped": (1) "Elements in the research situation," (2) "the complexity of the situation described as orthopedic," and (3) "the need for new approaches to research." Also considered are methodology and its relationship to value theory, role theory, the term 'illness' in relation to the orthopedically handicapped patient, and the "area of dynamic psychology and personality theory."

1050. Wolski, William, and Light, Gerald S.: "Cerebral Dysfunction in Children; Do Not Procrastinate," *Clinical Pediatrics*, 8:5, Jan., 1969.

"This brief presents the case for early diagnosis, direction, and treatment of children with possible symptoms of cerebral dysfunction." The effects on the young child and his family of the "wait and see approach" in such cases are discussed.

1051. Wood, Ben; Comley, Ann; and Sherwell, Janet: "Effect of Additional Albumin Administration During Exchange Transfusion on Plasma Albumin-Binding Capacity," *Archives of Disease in Childhood*, 45:59-62, Feb., 1970.

Exchange transfusions were given to a total of 33 infants with hyperbilirubinemia. Two groups or 23 of these infants also received albumin, using two different methods of administration, while 10 were controls. Results on the three groups concerning the effects on bilirubin, albumin, reserve albumin-binding capacity, and diffusion of the albumin are presented. "Both albumin-treated groups showed significantly higher levels of plasma albumin and of reserve albumin-binding capacity in the phase of bilirubin rebound eight hours or more after exchange."

1052. Wood, Carl, ed. *Fifth World Congress of Gynaecology and Obstetrics*. Held in Sidney, Australia, September, 1967. Australia: Butterworth's, 1967. 934 pp.

Contained in this volume are the papers presented by the three principle speakers of this Congress, "main papers," and "free communications" or abstracts. The papers and abstracts have been grouped by subject. Subjects pertinent to this bibliography under which papers and abstracts are found include "Effects of Abnormal Labour on the Foetus and the Newborn" and "Recent Progress." Many abstracts, unrelated to subjects of concern to the Congress, are included at the end of the book.

1053. Wood, Carl; Ferguson, Russell; Leeton, John; Newman, Warwick; and Walker, Adrian: "Fetal Heart Rate and Acid-Base Status in the Assessment of Fetal Hypoxia," *American Journal of Obstetrics and Gynecology*, 98: 62-70, May 1, 1961.

Reported is a study undertaken to determine "the comparative usefulness" of two methods of diagnosing fetal hypoxia. The methods studied and compared were: (1) measurement of fetal blood acid-base status, and (2) continuous monitoring of the fetal heart rate during labor. Methods of study are described. The majority of the 129 patients studied had various obstetrical conditions which could increase the likelihood of fetal hypoxia occurring. Results from using both methods, several individual cases, and apparent problems are reported. It is concluded that both methods "are valuable in assessing fetal condition and are complementary to each other."

1054. Wood, Carl, and Pinkerton, John H.M.: "Foetal Distress," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 68:427-437, June, 1961.

Physiological factors, diagnosis, and treatment of this condition are discussed. Of specific concern is the significance of meconium-stained liquor and the fetal heart rate.

1055. Wood, Carol; Lumley, Judith; and Renou, Peter: "A Clinical Assessment of Fetal Diagnostic Methods," *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 74:823-825, Dec., 1967.

The results of fetal diagnostic tests, used during labor on infants that had Apgar scores of 0 - 3 at two minutes of age, were assessed in order "to elucidate the events leading up to the birth of babies in poor condition." The fetal heart rate was recorded, and fetal blood pH, Po_2, Pco_2, base deficit, and glucose were measured. In the majority of the babies both the blood pH and the fetal heart rate were abnormal during the second stage of labor, and fetal heart rate changes were revealed to usually precede a fall in blood pH, Po_2, and Pco_2 measurements were found to be "less useful as prognostic tests."

1056. Wood, E. Carl; Beischer, N.A.; and Barham, K.A.: "Use of Fetal Assessment Tests," *Developmental Medicine and Child Neurology*, 11:608-616, Oct., 1969.

The "use and limitations of" several fetal assessment tests are reviewed. Tests included are the measurement of the amount of estriol excreted in maternal urine, amnioscopy, amniocentesis, continuous monitoring of the fetal heart rate during labor, and fetal scalp blood collection to test for fetal acidosis.

1057. Wood, Mary Margaret. *Rutland Center.* Austin, Texas: University of Texas, Program for Staff Training of Exemplary Early Childhood Centers for Handicapped Children, [1971]. 59 pp. (Staff Training Prototype Series Vol. II, No. 10.)

In six chapters is described "the Training Component process during the planning grant year for the preschool project" at Rutland Center. "Rutland Center is a community-based facility in Athens, Georgia which combines professional mental health and special education personnel in a cooperative program of psycho-educational service to seriously emotionally disturbed or behaviorally disordered children." Chapter One consists of an "Introduction" to the training component and each of the subsequent five chapters deals with planning activities in one of the following subareas: "staff training, college training, volunteer training, paraprofessional training, and parent training." Following each of these five chapters are appendices containing forms, etc., pertinent to that subarea of training.

1058. Woodrow, J.C.; Clarke, C.A.; Donohoe, W.T.A.; Finn, R.; McConnell, R.B.; Sheppard, P.M.; Lehane, D.; Russell, Shona H.; Kulke, W.; and Durkin, Catherine M.: "Prevention of Rh-Haemolytic Disease: A Third Report," *British Medical Journal,* 1:279-283, Jan. 30, 1965.

In a previous paper by these authors (Clarke, Et al, 1963), experiments were described in which injected Rh-positive cells were removed from the circulation of Rh-negative male subjects by administering "high-titre incomplete anti-D." In the first part of this article an experiment is described in which it was shown that Rh-positive fetal cells could also be removed from the circulation of Rh-negative women. In the second section of this paper, experiments are described in which "two

factors of great importance in the application of the technique to preventing Rh immunization due to pregnancy" are studied. These two are the "frequency with which transplacental haemorrhage occurs during pregnancy as distinct from delivery, and the relation of the production of immune antibodies to the size of transplacental haemorrhage assessed after delivery." In the third part of this article a clinical trial is discussed in which anti-D gamma globulin was injected into Rh-negative women following delivery.

1059. Woods, Grace E.: "The Early Diagnosis of Cerebral Palsy," *Cerebral Palsy Review*, 22:10-13, Mar.-Apr., 1961.

On these pages are four short papers by Grace E. Woods, Julio Pinto Duarte, Jacques Hariga, and Ben Epstein, respectively, on the above subject. These papers were presented at the World Commission on Cerebral Palsy in 1960.

1060. Woods, Grace E.: "A Lowered Incidence of Infantile Cerebral Palsy," *Developmental Medicine and Child Neurology*, 5:449-450, Oct., 1963.

Results of a study on the incidence of cerebral palsy in Bristol are reported. A "highly significant" decline in the number of cases was noted within the time period 1943-1962. This decrease is indicated in a chart and the data is analyzed.

1061. Woods, Grace E.: "Some Clinical Notes and Electroencephalographic Findings in Cerebral Palsy," *Archives of Disease in Childhood*, 40:394-401, Aug., 1965.

The EEG findings in a group of 206 cerebral palsied children are analyzed in groups according to the type of movement disorder present - athetosis, hemiplegia, spastic diplegia (subdivided by etiological factors), ataxia, and "minimal movement defect." The value of the EEG with such children is discussed.

1062. World Health Organization. "The Early Detection of Handicaps in Children," *W.H.O. Chronicle*, 22:16-19, Jan., 1968.

The risk register, screening, and a combination of the two are discussed as possible methods of selecting children in whom a handicap is likely.

1063. Wright, Francis S.: "An Approach to Hypotonia in Children," *Postgraduate Medicine*, 50:116-120, July, 1971.

The physiologic and clinical aspects of hypotonia are described, and the condition is differentiated into "central hypotonia," resulting from "diffuse disease of the central nervous system" and "peripheral hypotonia," "resulting from disease of the peripheral neuromuscular system or motor unit." The two types are individually described. It is noted that in some conditions there is involvement of both types.

1064. Wu, Paul Y.K.; Teilmann, Peter; Gabler, Marjorie; Vaughan, Mary; and Metcoff, Jack: "'Early' Versus 'Late' Feeding of Low Birth Weight Neonates: Effect on Serum Bilirubin, Blood Sugar, and Responses to Glucagon and Epinephrine Tolerance Tests," *Pediatrics*, 39:733-739, May, 1967.

Compared were 21 well, low-birth-weight infants who were fed early "(2 hours after birth)" and 21 well, low-birth-weight infants who were fed late "(24 to 36 hours after birth)." Methods of determination and comparison results on the variables listed in the title are presented. Weight loss was found to be less, and weight was regained earlier in the group fed early. "No adverse effects were observed as a result of early feeding. Such feedings may indeed have an advantage in reducing serum bilirubin levels, raising blood sugar, and increasing liver glycogen reserves."

1065. Wurth, Charles W.: "Apgar Test for the Neurological Assessment of Newborns," *Cerebral Palsy Journal*, 27:5-7, Jan.-Feb., 1966.

The Apgar Test is described and is evaluated in terms of item analysis, reliability, and validity.

1066. Wyatt, Thomas H.; Halbert, David R.; and Crenshaw, Carlyle: "Estimation of Fetal Maturity by Cytologic Examination and Creatinine Determination of Amniotic Fluid," *Obstetrics and Gynecology*, 34:772-778, Dec., 1969.

Previous work done in the area of estimating fetal maturity is briefly reviewed. Amniotic fluid samples were obtained from 111 women late in pregnancy and were analyzed "for 'fat cell' counts and creatinine concentrations." The results were then compared to the birth weights of the infants. Procedures are described. "Fetal maturity was correctly indicated by 94% of the fat cell counts of 20% and greater, and by 97% of the creatinine concentrations of 1.5mg/100 ml. or more." It is concluded and explained that "when there is disagreement between the two analyses, creatinine concentration is more reliable than 'fat cell' counts for indicating maturity and prematurity."

1067. Yamazaki, James N.: "A Review of the Literature on the Radiation Dosage Required to Cause Manifest Central Nervous System Disturbances from in Utero and Postnatal Exposure," *Pediatrics*, 37:877-903, May, 1966.

Surveyed is the literature regarding studies on the effects of radiation on the central nervous system of the mammalian fetus and neonate. Studies on both morphologic and behavioral effects are reported. A lengthy bibliography follows the text.

1068. Yandric, Gayle: "A Frame for Supporting the Cerebral Palsied Child," *American Journal of Occupational Therapy*, 20:151-152, May-June, 1966.

Such a frame designed "to facilitate early developmental patterns of activities of the upper extremities and a stronger shoulder musculature," is described in detail and illustrated. The child using the frame is in a prone and relaxed position in which "active exercises for upper extremity patterning and hand skills can be instituted at an early age, especially for the grossly involved cerebral palsy child, thus facilitating treatment in other areas."

1069. Yerushalmy, J.: "The Classification of Newborn Infants by Birth Weight and Gestational Age," *Journal of Pediatrics*, 71:164-172, Aug., 1967.

In this paper the objectives of such a combined classification system are formulated; several classification systems based on birth weight and gestational age, which have been used, are reviewed; and such a system, which places neonates in one of five groups, is proposed and discussed.

1070. Yeung, C.Y.: "Hypoglycemia in Neonatal Sepsis," *Journal of Pediatrics*, 77:812-817, Nov., 1970.

Of 56 neonates admitted to a Hong Kong hospital because of "obvious clinical features of infection," 17 were revealed to have hypoglycemia. When hypoglycemia was present, gram-negative organisms were predominantly found to be the causal factors in the infection, but in those infected infants who were normoglycemic, gram-positive organisms were predominant. Possible implications and explanations are considered.

1071. Yeung, C.Y., and Field, C. Elaine: "Phenobarbitone Therapy in Neonatal Hyperbilirubinemia," *Lancet*, 2: 135-139, July 19, 1969.

Two hundred and ten Chinese neonates, who were jaundiced for various reasons, were studied. Ninety-three were given phenobarbitone, as described, and 117 were not. Fifty-three of the controls and only four of the treated infants needed exchange transfusions. Results concerning those infants "with ABO incompatibility, glucose-6-phosphate dehydrogenase deficiency, cephalhaematoma, and non-specific causes" are individually reported and show that bilirubin levels were significantly reduced when these babies were given phenobarbitone.

1072. Yeung, C.Y.; Tam, L.S.; Chan, Angeline; and Lee, K.H.: "Phenobarbitone Prophylaxis for Neonatal Hyperbilirubinemia," *Pediatrics*, 48:372-376, Sept., 1971.

Three groups of infants born of blood group O mothers were studied. "The first consisted of 45 control infants receiving no medication, the second of 44 infants born of mothers who received 30 mg. of the drug every night for an average of two weeks before delivery, and the third of 44 infants given phenobarbitone 5 mg. 8-hourly for an average of 3 1/2 days beginning 6 to 8 hours after birth." Eighty-six of the infants had group O blood while 47 had ABO incompatibility. Findings after determining serum bilirubin levels daily in these infants for six days are reported. "Treated infants showed significant reduction of incidence of neonatal hyperbilirubinemia and of mean bilirubin levels as compared to the controls. Infants born of treated mothers showed similar beneficial effects, though such effects were much diminished in those with ABO incompatibility." No serious complications were detected. Findings are interpreted.

1073. Younoszai, M.K., and Haworth, J.C.: "Chemical Composition of the Placenta in Normal Preterm, Term, and Intrauterine Growth-Retarded Infants," *American Journal of Obstetrics and Gynecology*, 103:262-264, Jan. 15, 1969.

The chemical compositions of the placentas in normal preterm (26), term (54), and intrauterine growth-retarded infants (30) were determined and compared. The method of analysis is described. Statistically significant differences in placental weights were noted. The placentas of the intrauterine growth-retarded group were significantly higher in protein content than were those of the other higher lipid content than did those of the other two groups. Implications are discussed.

1074. Younoszai, M.K., and Haworth, J.C.: "Placental Dimensions and Relations in Preterm, Term, and Growth-Retarded Infants," *American Journal of Obstetrics and Gynecology*, 103:265-271, Jan. 15, 1969.

The placentas of 26 normal preterm, 85 normal term, and 52 term intrauterine growth-retarded infants were examined and compared with respect to weight, decidual surface area, thickness, density, and cord diameter. Measurement methods are described. Fetoplacental weight ratios were determined, and the relationships found between the placental dimensions and the factors of gestational age and birth weight are reported and summarized.

1075. Yousem, Herbert; Seitchik, Joseph; and Solomon, David: "Maternal Estriol Excretion and Fetal Dysmaturity," *Obstetrics and Gynecology*, 28:491-494, Dec., 1966.

Estriol levels were determined in 12 obstetric patients who displayed signs of fetal dysmaturity "in an attempt to relate estriol excretion to retarded fetal and placental growth and to duration of gestation." Other criteria fulfilled by the cases are listed. "In 11 of the 12 mothers, the urinary excretion was distinctly diminished." Implications are considered.

1076. Yu, John: "Neonatal Meningitis; Pathogenesis, Diagnosis, Management, Sequelae," *Clinical Pediatrics*, 4:387-390, July, 1965.

Topics included in this discussion are diagnostic difficulties, newborn susceptibility, "characteristic reactions to the invading pathogens," diagnostic and treatment methods and expected results. "Sixty per cent of survivors have late complications" which are listed and often involve cerebral dysfunction.

1077. Yudkin, Simon, and Yudkin, Gillian: "Poverty and Child Development," *Developmental Medicine and Child Neurology*, 10:569-579, Oct., 1968.

The effects of poverty on child development are reviewed by reporting results of numerous related studies. Prenatal, perinatal, postnatal, and educational effects are considered. Emphasis is placed on assessing the effects by referring to social indices such as the Registrar General in Britain.

1078. Zachau-Christiansen, B., and Vollmond, K.: "The Relation Between Neonatal Jaundice and the Motor Development in the First Year," *Acta Paediatrica Scandinavica Supplement*, 159:26-29, 1965.

The motor development of a group of children having had neonatal jaundice was assessed at one year of age. Described in tables, the results showed neonatal jaundice to be "of importance in a negative direction for many children during their first year of life."

1079. Zakhary, Rizkalla; Miller, J.A., Jr.; and Miller, Faith S.: "Hypothermia, Asphyxia and Brain Carbohydrates in Newborn Puppies," *Biologia Neonatorum*, 11:36-49, 1967.

A group of puppies, less than one day old, were asphyxiated for varying periods and then maintained at either 37° C. ("coenothermic"), 42° C. (hyperthermic), or 15° C. (hypothermic). Unasphyxiated control puppies were also included. After such treatment, the brains of the dogs were removed; divided into cerebrum, cerebellum, and brain stem; frozen; and analyzed for carbohydrate levels. All methods are described, detailed data are presented, results are discussed at length, and principle findings are listed in the "Summary." The results "suggest that hypothermia protects by both increasing the anaerobic energy stores in the brain and by reducing rate of attribution of these resources during exposure to asphyxia."

1080. Zapella, Michele: "The Placing Reaction in the First Year of Life," *Developmental Medicine and Child Neurology*, 8:393-401, Aug., 1966.

A study of the placing reaction in 350 infants under 1 year of age seen in the outpatient department of a hospital is reported. After describing the methods used in eliciting the response in both the upper and lower limbs, the author presents the methodology and results. Brief case histories are presented for the five cases in which the reaction was not present in the legs. Four of these showed signs of brain damage. In the arms the reaction was rarely present before four months of age but nearly always present after age five months. Observations of the reaction or its absence in sick children on wards are explained and pertinent literature is discussed.

1081. Zausmer, Elizabeth: "The Evaluation of Motor Development in Children," *Physical Therapy*, 44:247-250, Apr., 1964.

Methods of evaluating motor development are mentioned, phases of motor development important in the evaluation process are listed, and the three "main components (that) must be considered in the analysis of a motor activity" are listed and discussed. These three are: "1. Developmental levels. 2. The motivation to perform the activity. 3. The quality of the obtained performance." A rating

scale is then presented which was designed to assess the motor behavior of handicapped children and in which an attempt was made to incorporate the three above factors.

1082. Zausmer, Elizabeth: "Locomotion in Cerebral Palsy; The Approach of the Physical Therapist," *Clinical Orthopaedics and Related Research*, 47:49-55, July-Aug., 1966.

The current methods of treatment in cerebral palsy are reviewed, and it is pointed out that all of these approaches emphasize "the importance of the developmental stages." The value of early treatment is greatly stressed, and the rationale behind early treatment is explained. Very early usage of tactile stimuli to elicit reflexive movement in the young cerebral palsied is endorsed as being helpful in later sitting and walking. Various reflexes and methods of their elicitation are discussed in this regard. Ways of helping the cerebral palsied child to achieve locomotion are described. The need to improve preception in cerebral palsied children is mentioned.

1083. Zdanska-Brinker, M., and Walanski, N.: "A Graphic Method for the Evaluation of Motor Development in Infants," *Developmental Medicine and Child Neurology*, 11:228-241, Apr., 1969.

A new method of measuring motor development is described in which four different spheres of development can be assessed. By using grids composed of 34 "stage ages," it is possible to determine a child's state of motor development and to measure deviations in a quantitative form. Data is presented on the results of studies involving 212 children whose development was recorded from the age of four weeks until they were able to walk by themselves. Percentile tables show at what age children in the assessed population passed through the various stages in each of the four spheres. Deviations from the normal figures can then indicate relative retardation of motor development in each sphere of abilities.

1084. Ziel, Hermann, A., Jr.: "Erythroblastosis Fetalis an Obstetric Responsibility," *Postgraduate Medicine*, 32:489-496, Nov., 1962.

The condition is described, the objectives to be met in prenatal care in cases of maternal sensitization and erythroblastosis fetalis are outlined, and obstetric and pediatric care of the erythroblastotic infant is discussed.

1085. Zuelzer, Wolf W., and Brown, Audrey: "Neonatal Jaundice: A Review," *American Journal of Diseases of Children*, 101:87-127, Jan., 1961.

Reviewed are both the theoretical and practical features of neonatal jaundice. Physiological aspects are dealt with at length, a classification chart is presented, and "Clinical Situations Associated with Jaundice" are described. Also considered in detail are kernicterus and therapeutic principles.

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